SONY

3-759-168-**21** (1)

Video Cassette Recorder

Operating Instructions

VHS

Hi-Fi

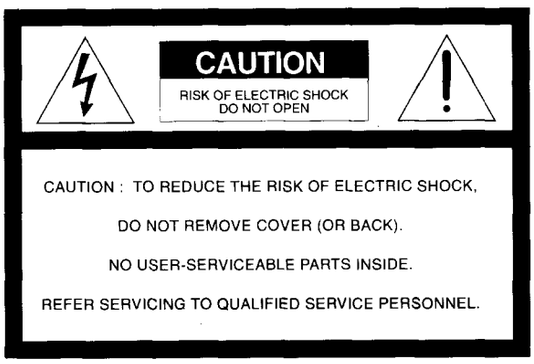
VCR*Plus+*

SLV-780HF
SLV-781HF

© 1994 by Sony Corporation

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION

To prevent electric shock, do not use this polarized AC plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Precautions

Safety

- Operate the unit only on 120V AC, 60 Hz.
- If anything falls into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your Sony dealer.
- Unplug the unit from the wall outlet if you do not intend to use it for an extended period of time. To disconnect the cord, pull it out by the plug, never by the cord.

Installing

- Allow adequate air circulation to prevent internal heat buildup.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Do not install the unit in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the unit and cassettes away from equipment with strong magnets, such as microwave ovens or large loudspeakers.
- Do not place heavy objects on the unit.
- If the unit is brought directly from a cold to a warm location, moisture may condense inside the VCR and cause damage to the video head and tape. When you first install the unit, or when you move it from a cold to a warm location, wait for about one hour before operating the unit.

Information

For customers in the USA

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Caution

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmission and/or program owner.

Owner's record

The model number is located at the rear and front of the unit and the serial number on the top. Record these numbers in the spaces provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. _____ Serial No. _____

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Welcome!

Thank you for purchasing the Sony Video Cassette Recorder (VCR). Here are some of the features you'll enjoy with your VCR:

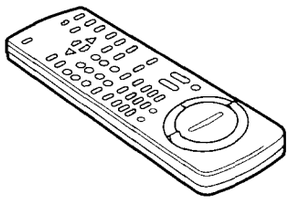
- Easy Set Up feature that sets up the clock, cable box control and presets channels easily using the EASY SET UP button
- Auto Clock™ Set feature that sets and adjusts the time and date automatically
- Cable box control that allows your VCR to control channel selection on most brands of cable boxes
- VCR Plus+* system that lets you quickly and easily preset the VCR to record programs
- Adaptive Picture Control (APC) that automatically optimizes recording and playback performance
- Remote commander that features multi-brand TV control

* VCR Plus+ and PlusCode are trademarks of Gemstar Development Corporation. VCR Plus+ system is manufactured under license from Gemstar Development Corporation.

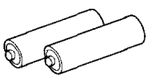
Step 1: Unpacking

Check that you have the following items:

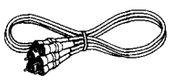
- **Remote commander**



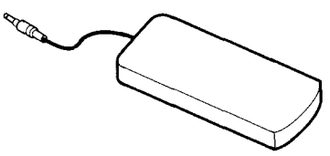
- **Size AA (R6) batteries**



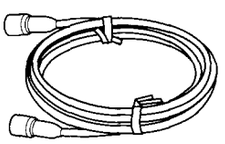
- **Audio/video cable (3-phono to 3-phono)**



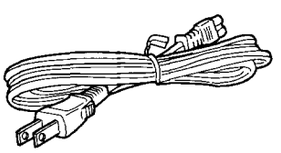
- **Cable Mouse (cable box controller)**



- **75-ohm coaxial cable with F-type connectors**



- **AC power cord**



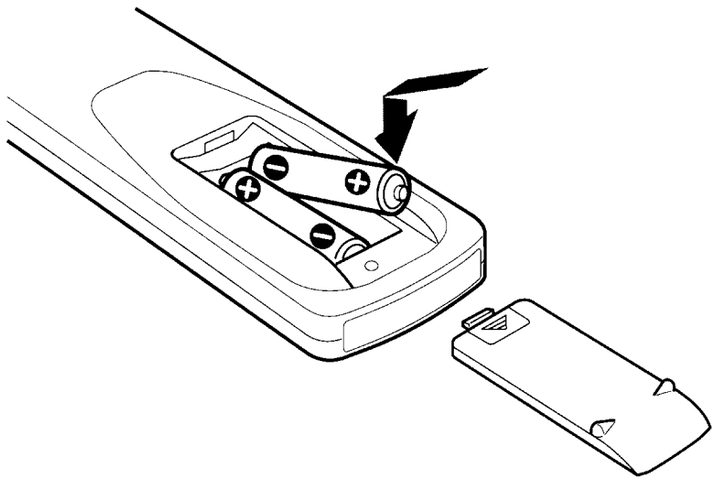
Step 2: Setting up the remote commander

Notes

- With normal use, the batteries should last for approximately three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

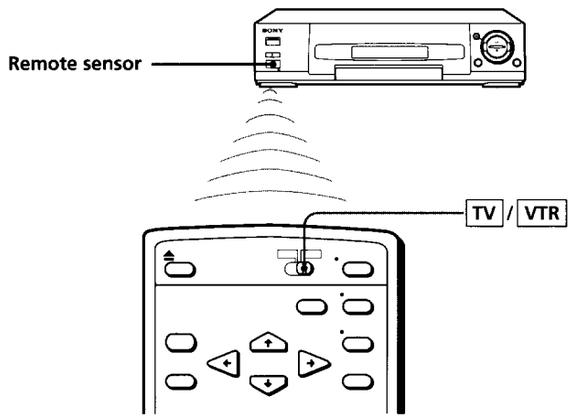
Inserting the batteries

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. The POWER, VOL +/–, CH +/–, TV/VTR, channel number, ENTER, DISPLAY and AUDIO MONITOR buttons on the remote commander can be used to operate your TV.



To operate	Set TV/VTR to
the VCR	VTR and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

Notes

- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote commander, the code number automatically resets to 1 (Sony). Reset the appropriate code number.

Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs. If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set TV/VTR on the top of the remote commander to TV.
2 Press and hold down EXECUTE, and then enter your TV's code number(s) using the number buttons. Press the ENTER button. Then release EXECUTE.

Code numbers are listed below.
Now you can use the POWER, VOL +/–, CH +/– and TV/VTR buttons to control your TV. To control the VCR, reset TV/VTR to VTR.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number
Sony	1
Akai	4
AOC	4
Centurion	12
Coronado	3
Curis-Mathes	12
Daytron	12
Fisher	11
General Electric	6, 10
Hitachi	2, 3
J.C.Penney	4, 12
JVC	9
KMC	3
Magnavox	3, 8, 12
Marantz	4, 13
MGA/Mitsubishi	4, 12, 13, 17
NEC	4, 12
Panasonic	6, 18

Manufacturer	Code number
Philco	3, 4
Philips	8
Pioneer	16
Portland	3
Quasar	6, 18
Radio Shack	5, 14
RCA	4, 10
Sampo	12
Sanyo	11
Scott	12
Sears	7, 10, 11
Sharp	3, 5, 18
Sylvania	8, 12
Teknika	3, 8, 14
Toshiba	7
Wards	3, 4, 12
Yorx	12
Zenith	15

Step 3: Hookups

Caution
Connections between the VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the VCR to an antenna or make simultaneous (parallel) antenna and VCR connections at the antenna terminals of your receiver.

Note to CATV system installer
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Selecting the best hookup option

Before you can use your VCR for the first time, you need to connect it to your TV and set it up to receive programs for viewing and recording. This section explains how to hook up and set up your VCR so that you can start enjoying it right away. There are, however, many types of TVs available and many ways in which your TV can be hooked up. For these reasons, this manual describes several ways your VCR can be connected.

To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to set up your VCR.

If you have	Use	Refer to
TV that has audio/video inputs	Audio/video (A/V) hookup, then follow one of the hookups below.	Page **9**
Cable box that is compatible with the VCR's cable box control feature	Hookup 1	Page **10**
No cable box or incompatible cable box with only a few scrambled channels	Hookup 2	Page **12**
Antenna only, no cable TV	Hookup 3	Page **14**
Incompatible cable box with many scrambled channels	Hookup 4	Page **16**
Incompatible cable box with only a few scrambled channels, using an A/B switch	Hookup 5	Page **18**

After you've completed the connections, follow the instructions for setup including VCR Plus+ setup. During setup, if you need more details of the procedure described, page numbers are provided where you can find complete, step-by-step instructions.

After you've completed the setup, you're ready to use your VCR. Procedures differ depending on the hookup you used. For an overview, refer to "Quick reference to using the VCR" on the back cover.

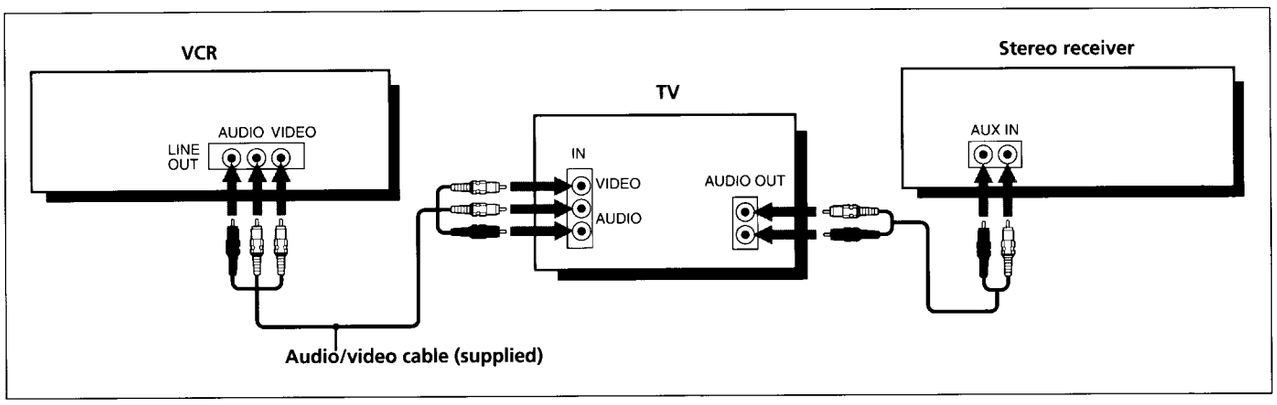
Before you get started
- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified technician.

Audio/video (A/V) hookup

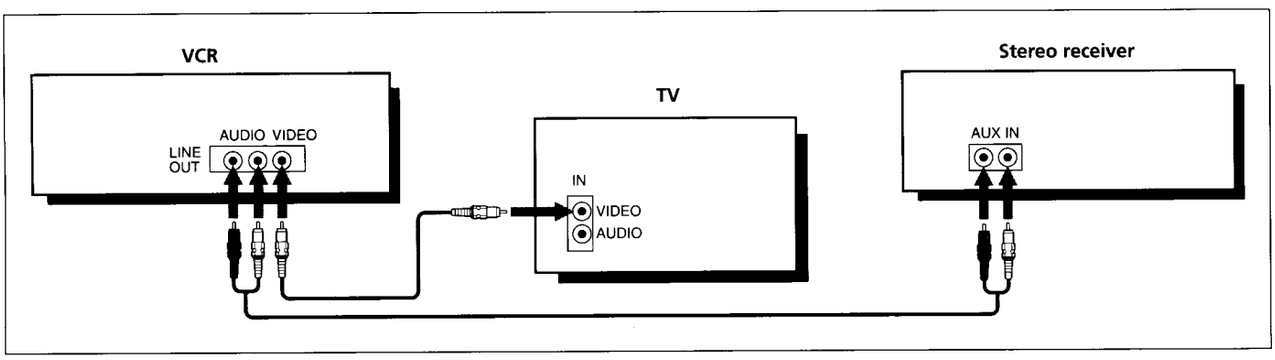
If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

If you're planning to use your VCR only to play back pictures and movies, you're finished setting up the VCR after you've made these connections. If you want to record off-air or off your cable TV system, complete these connections first, and then go to the following pages for antenna or cable hookups.

A Use this hookup if your TV has stereo jacks



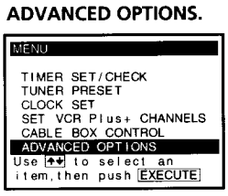
B Use this hookup if your TV doesn't have stereo jacks



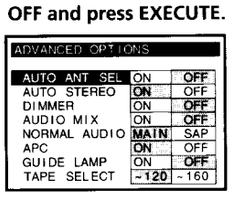
A/V hookup: VCR setup

After you've connected your TV and completed antenna or cable hookup, use the following procedure to set up the VCR.

Press MENU and select ADVANCED OPTIONS.



Set AUTO ANT SEL to OFF and press EXECUTE.



For details, see page 34.

Note

To play a tape in stereo, you must use the A/V connection.

Hookup 1

Using cable box control

Recommended use

This hookup is recommended for most cable systems with cable boxes. It allows the VCR's cable box control feature to control the channel on the cable box, simplifying the recording process. You should use this hookup if you have a cable box, especially if your cable system scrambles all or most channels. A list of compatible cable boxes is on page **29**.

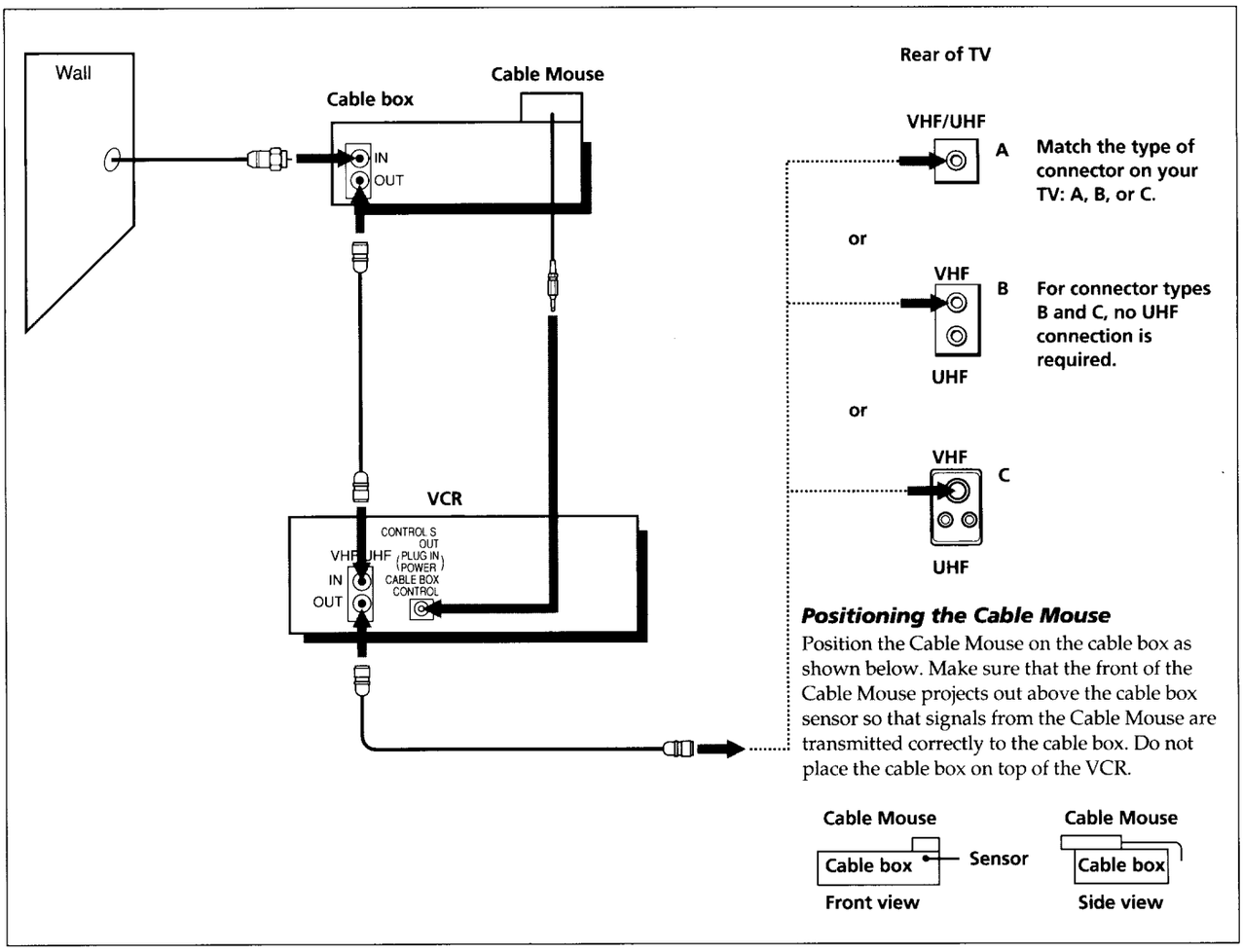
What you can and can't do with this hookup

What you can do

- Record any channel using the VCR's cable box control feature to select channels on the cable box

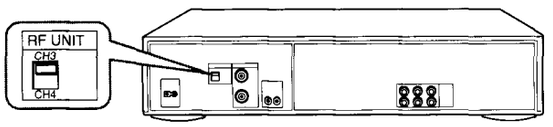
What you can't do

- Record with the cable box turned off
- Record one channel while watching another channel



Hookup 1: VCR setup

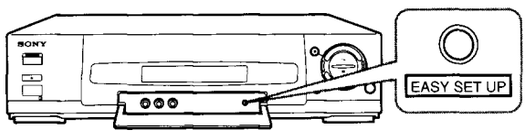
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.



For details, see page 56.

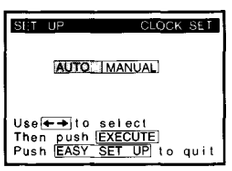
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.
The SET UP menu appears.

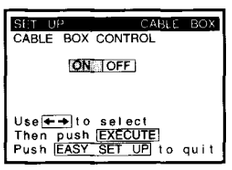


1 **(Canadian model only)**
The LANGUAGE menu appears.
Change the on-screen display language to French (FRANÇAIS) if desired, and press EXECUTE.
For details, see page 21.

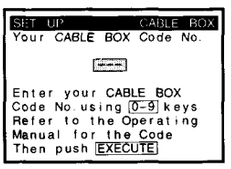
2 The CLOCK SET menu appears. Select AUTO and press EXECUTE.
For details, see page 22.



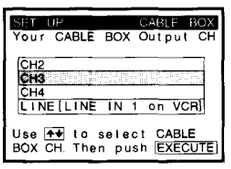
3 The CABLE BOX CONTROL menu appears. Select ON and press EXECUTE.
For details, see page 28.



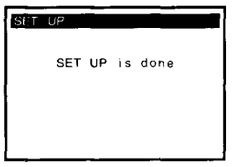
4 Enter your cable box code number and press EXECUTE.
For details, see page 28.


SET UP CABLE BOX
Your CABLE BOX Code No.
Enter your CABLE BOX Code No. using 0-9 keys
Refer to the Operating Manual for the Code
Then push EXECUTE

5 Select your cable box output channel and press EXECUTE.
For details, see page 28.



Normal display ←



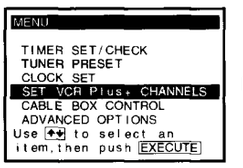
If your cable box is not compatible, check with your cable company to see if they can provide a compatible cable box. If not, use Hookup 2 (if you have only a few scrambled channels) or Hookup 4 (if you have many scrambled channels).

Hookup 1: VCR Plus+ channel setup

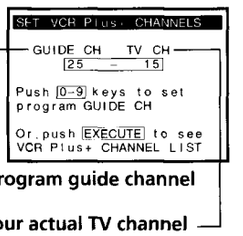
1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **31**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.



Enter the program guide channel, then the channel you use on your TV.


SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 15
Push 0-9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST
Program guide channel
Your actual TV channel

For details, see page 32.

Press EXECUTE.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks if the clock displays the current time. If not, it adjusts the clock automatically. Make sure to leave the cable box on. The VCR sets the clock by picking up a time signal that's provided by some TV channels. With the automatic clock setting feature you don't have to set the clock or even adjust to Daylight Saving Time.
If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages **22–24**.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 1) so that you can always follow the correct instructions.

Hookup 2

No cable box or Incompatible cable box with only a few scrambled channels

Recommended use

Use this hookup if you do not have a cable box. Also use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles only a few channels.

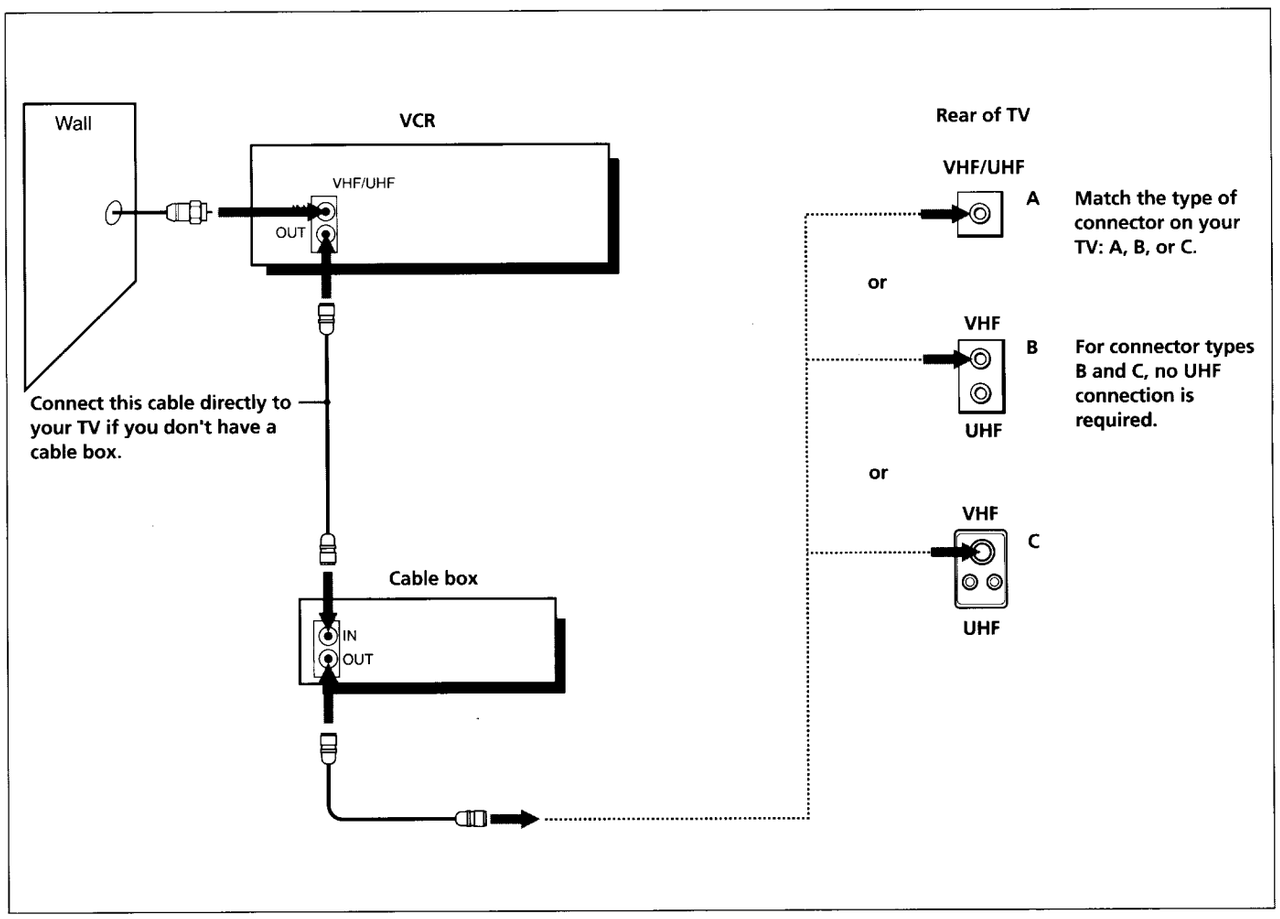
What you can and can't do with this hookup

What you can do

- Record any unscrambled channel by selecting the channel on the VCR

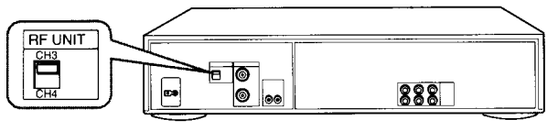
What you can't do

- Record scrambled channels that require a cable box



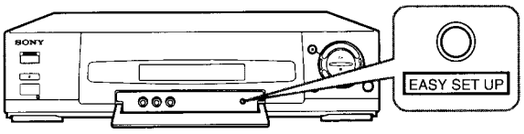
Hookup 2: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.



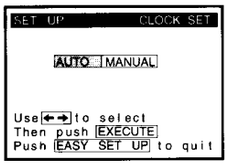
For details, see page 56.

2 Press EASY SET UP on the VCR.
The SET UP menu appears.

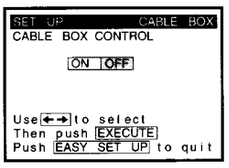


1 **(Canadian model only)**
The LANGUAGE menu appears.
Change the on-screen display language to French (FRANÇAIS) if desired, and press EXECUTE.
For details, see page 21.

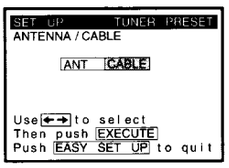
2 The CLOCK SET menu appears. Select AUTO and press EXECUTE.
For details, see page 22.



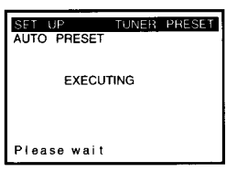
3 The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE.
For details, see page 28.

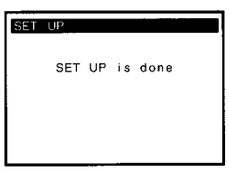


4 The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE.
For details, see page 25.



5 The AUTO PRESET starts.
For details, see page 25.





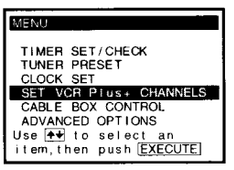
Normal display ←

Hookup 2: VCR Plus+ channel setup

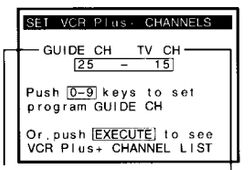
1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **31**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.



Enter the program guide channel, then the channel you use on your TV.



Program guide channel

Your actual TV channel

Press EXECUTE.

For details, see page 32.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks if the clock displays the current time. If not, it adjusts the clock automatically. Make sure to leave the cable box on. The VCR sets the clock by picking up a time signal that's provided by some TV channels. With the automatic clock setting feature you don't have to set the clock or even adjust to Daylight Saving Time.
If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages **22–24**.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 2) so that you can always follow the correct instructions.

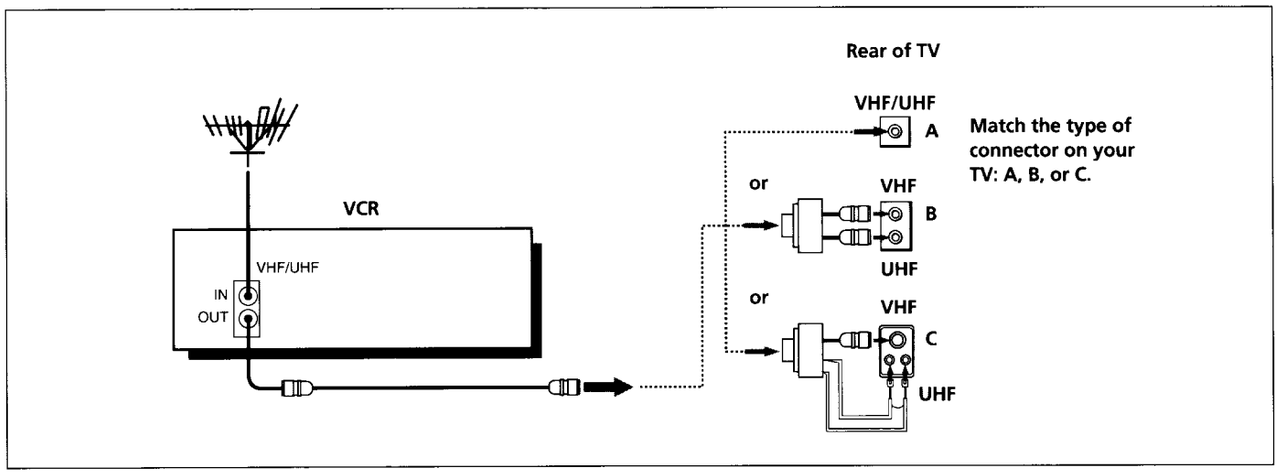
Hookup 3

Make the following connections if you're using an antenna (if you don't have cable TV).

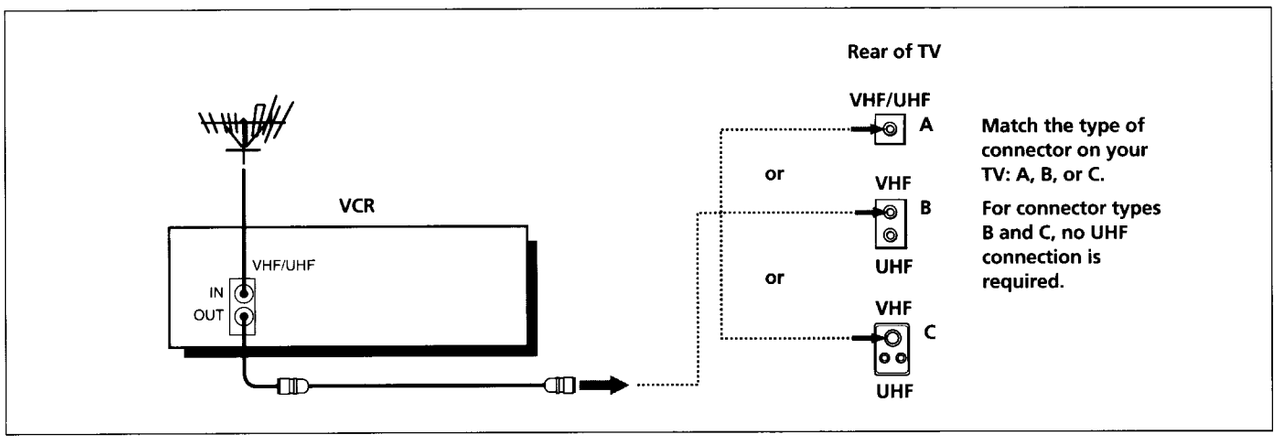
Antenna hookup

A Use this hookup if you're using:

- VHF/UHF antenna (you get channels 2–13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- separate VHF and UHF antennas



B Use this hookup if you're using a VHF-only antenna (you get channels 2–13 only)

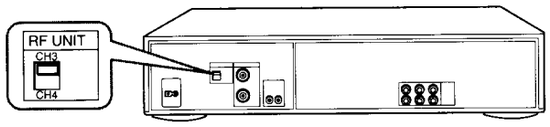


If you cannot connect your antenna cable to the VCR directly

If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so that you can connect the cable to the VHF/UHF IN connector. If you have separate cables for VHF and UHF antennas, you may use a U/V band mixer (not supplied). For details, see page **56**.

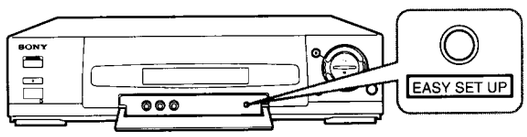
Hookup 3: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.



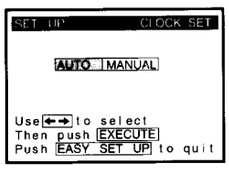
For details, see page 56.

2 Press EASY SET UP on the VCR.
The SET UP menu appears.

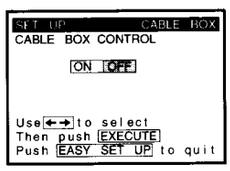


1 **(Canadian model only)**
The LANGUAGE menu appears.
Change the on-screen display language to French (FRANÇAIS) if desired, and press EXECUTE.
For details, see page 21.

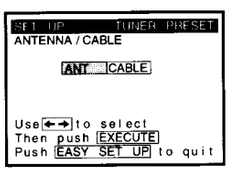
2 The CLOCK SET menu appears. Select AUTO and press EXECUTE.
For details, see page 22.



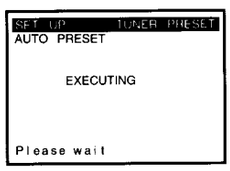
3 The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE.
For details, see page 28.



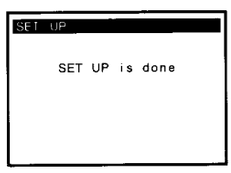
4 The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE.
For details, see page 25.



5 The AUTO PRESET starts.
For details, see page 25.



Normal display ←



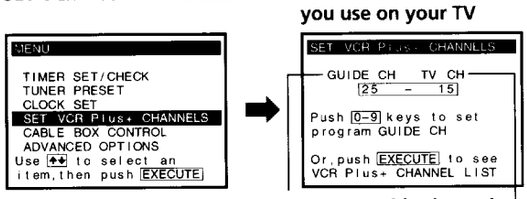
Hookup 3: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **31**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the channel you use on your TV


MENU
TIMER SET/CHECK
TUNER PRESET
CLOCK SET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS
Use ↕ to select an item, then push EXECUTE
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 - 15
Push 0-9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST

Program guide channel

Your actual TV channel

Press EXECUTE

For details, see page 32.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks if the clock displays the current time. If not, it adjusts the clock automatically. Make sure to leave the cable box on. The VCR sets the clock by picking up a time signal that's provided by some TV channels. With the automatic clock setting feature you don't have to set the clock or even adjust to Daylight Saving Time.
If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages **22–24**.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 3) so that you can always follow the correct instructions.

Hookup 4

Incompatible cable box with many scrambled channels

Recommended use

Use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles all, or most channels.

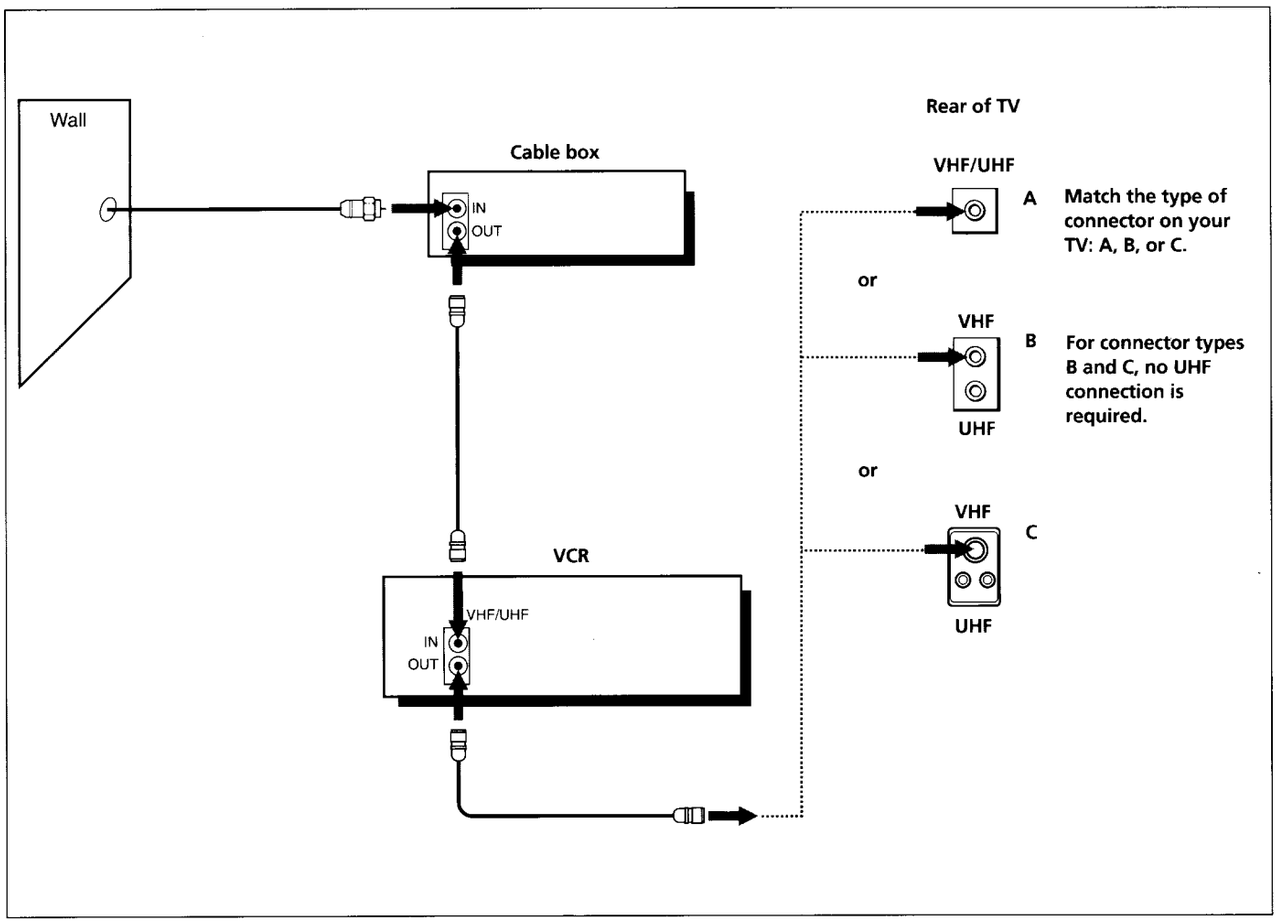
What you can and can't do with this hookup

What you can do

- Record any channel by selecting the channel on the cable box

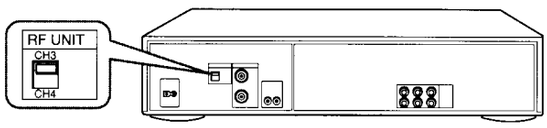
What you can't do

- Record with the cable box turned off
- Record one channel while watching another channel
- Record by selecting channels directly with the VCR



Hookup 4: VCR setup

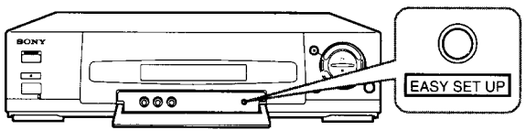
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.



For details, see page 56.

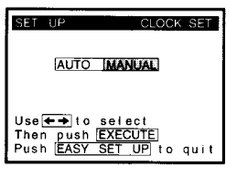
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.
The SET UP menu appears.

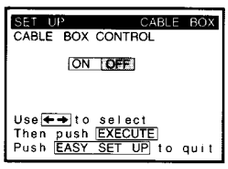


1 **(Canadian model only)**
The LANGUAGE menu appears.
Change the on-screen display language to French (FRANÇAIS) if desired, and press EXECUTE.
For details, see page 21.

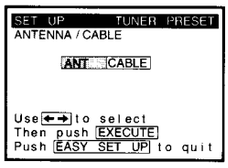
2 The CLOCK SET menu appears. Select MANUAL and press EXECUTE.
For details, see page 24.



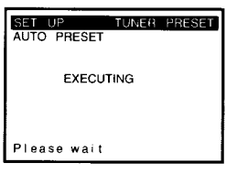
3 The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE.
For details, see page 28.

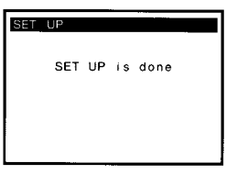


4 The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE.
For details, see page 25.



5 The AUTO PRESET starts.
For details, see page 25.





Normal display ←

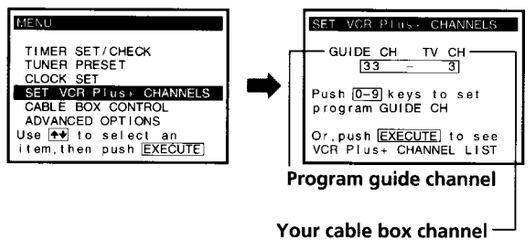
Hookup 4: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **31**.

2 Enter all the channels you want to record and the cable box output channel (usually 2, 3, or 4):

Press MENU and select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the cable box output channel.


MENU
TIMER SET/CHECK
TUNER PRESET
CLOCK SET
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS
Use ↕ to select an item, then push EXECUTE
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
33 – 3
Push 0-9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST

Program guide channel

Your cable box channel

For details, see page 32.

Press EXECUTE.

Note

You have to set the channel manually on the cable box for each recording.

Automatic clock setting

Since the channels have to be selected manually on the cable box with this hookup, the Auto Clock Set feature will not function fully (page **22**).
If you want to use the Auto Clock Set feature (when available), proceed as follows:

1 Tune the cable box to a channel that carries a time signal.
2 Leave the cable box on.
3 Turn on the Auto Clock Set feature.
4 Turn off the VCR.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 4) so that you can always follow the correct instructions.

Hookup 5

Incompatible cable box with only a few scrambled channels, using an A/B switch

Recommended use

By using an A/B switch (not supplied), this hookup allows you to record both scrambled and unscrambled channels conveniently. With the A/B switch set to position "A," you can record unscrambled channels by selecting channels directly with the VCR. You only use position "B" and the cable box to record a scrambled channel.

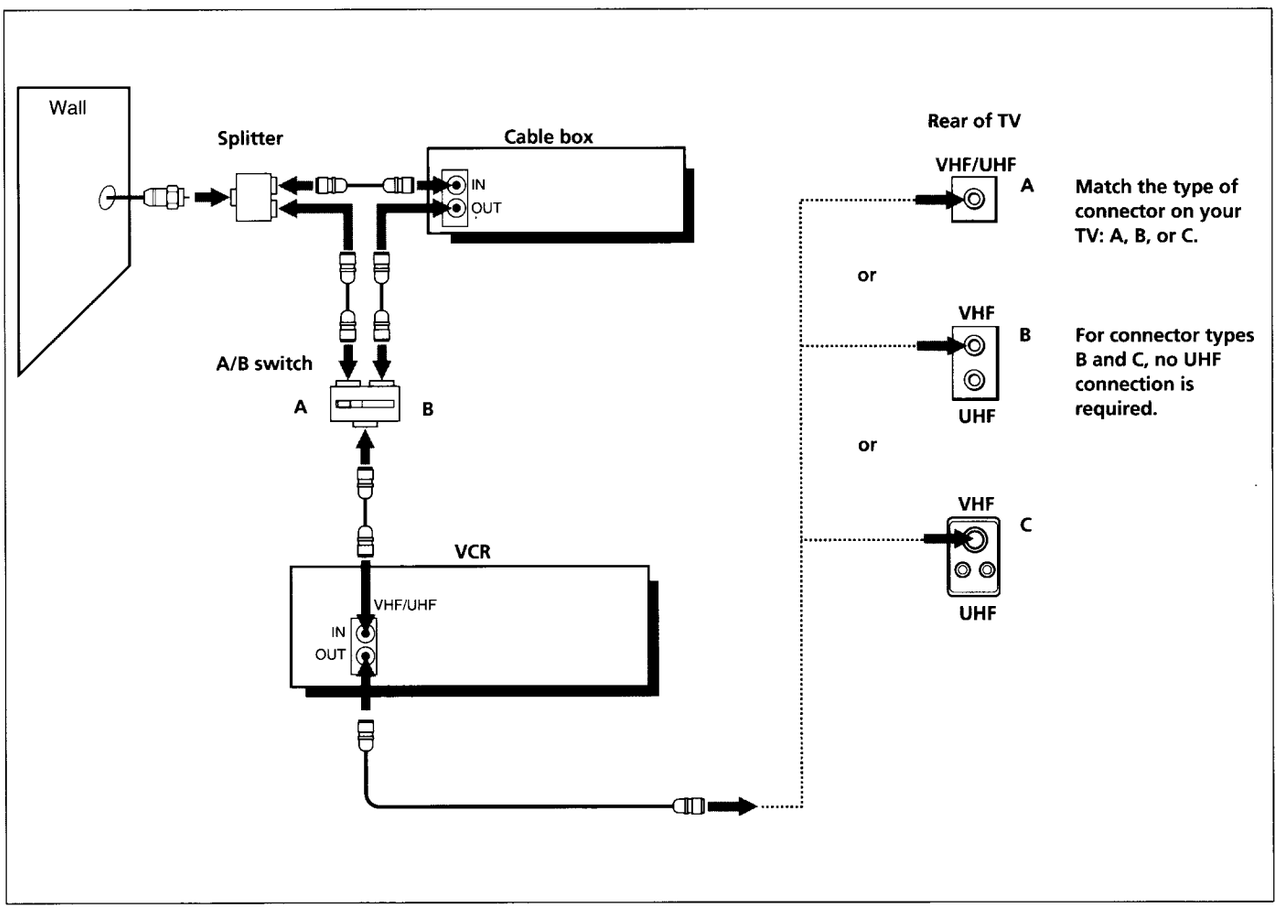
What you can and can't do with this hookup

What you can do

- Record any unscrambled channel by selecting the channel on the VCR (the A/B switch is set to A)
- Record any scrambled channel by selecting the channel on the cable box (the A/B switch is set to B)

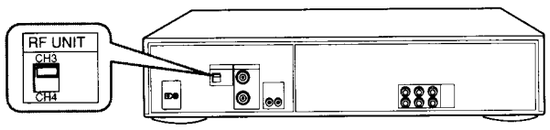
What you can't do

- Record one channel while watching another channel



Hookup 5: VCR setup

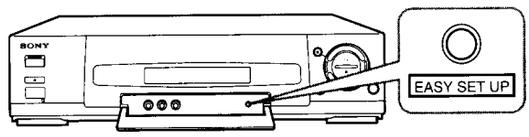
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.



For details, see page 56.

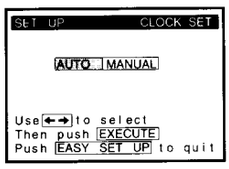
2 Set the A/B switch to "A."

3 Press EASY SET UP on the VCR.
The SET UP menu appears.

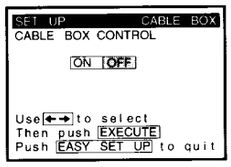


1 **(Canadian model only)**
The LANGUAGE menu appears.
Change the on-screen display language to French (FRANÇAIS) if desired, and press EXECUTE.
For details, see page 21.

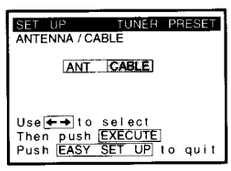
2 The CLOCK SET menu appears. Select AUTO and press EXECUTE.
For details, see page 22.



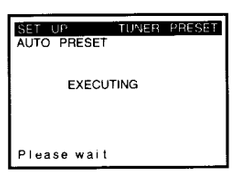
3 The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE.
For details, see page 28.



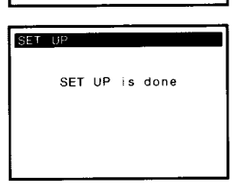
4 The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE.
For details, see page 25.



5 The AUTO PRESET starts.
For details, see page 25.

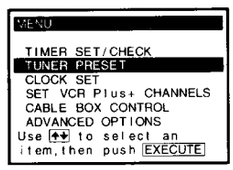


Normal display ←

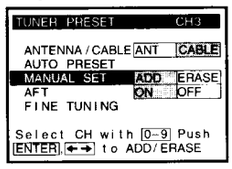


4 Preset the cable box output channel (usually 2, 3 or 4).

Press MENU and select TUNER PRESET.



Set MANUAL SET to ADD and press EXECUTE.



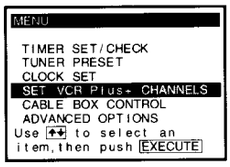
For details, see page 26.

Hookup 5: VCR Plus+ channel setup

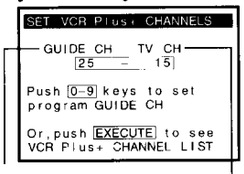
1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel listing, see page **31**.

2 For unscrambled channels, if the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS.



Enter the program guide channel, then the channel you use on your TV.



Program guide channel

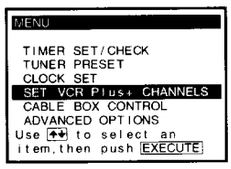
Your actual TV channel

Press EXECUTE.

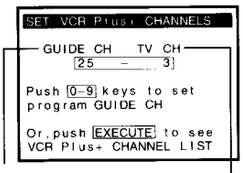
For details, see page 32.

3 For scrambled channels, enter all the scrambled channels you want to record and the cable box output channel (usually 2, 3, or 4):

Press MENU and select SET VCR Plus+ CHANNELS.



Enter the program guide channel, then the cable box output channel.



Program guide channel

Your cable box channel

Press EXECUTE.

For details, see page 32.

Hookup 5

Incompatible cable box with only a few scrambled channels, using an A/B switch (continued)

You are now ready to use your VCR

To record an unscrambled channel

1 Set the A/B switch to "A."
2 Select channels on the VCR.

To record a scrambled channel

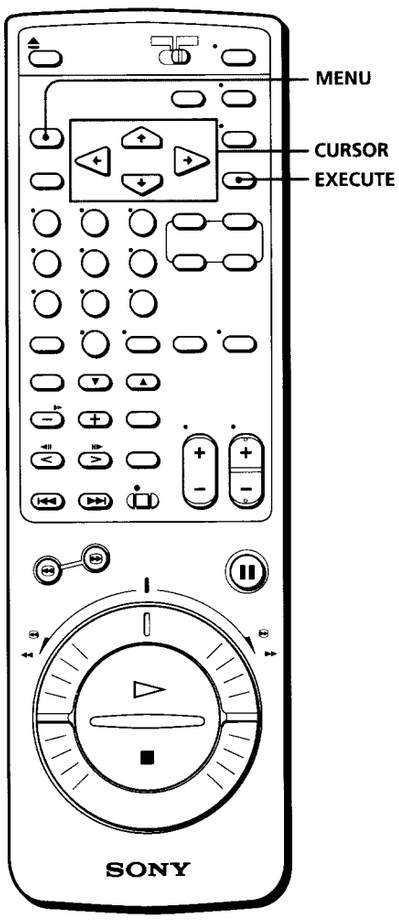
1 Set the A/B switch to "B."
2 Select channels on the cable box (for details on the cable box, see page **32**).

To watch TV

1 Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Set the A/B switch to "B."
3 Turn on your cable box.
4 Set the TV to the cable box output channel (usually 2, 3, or 4).
5 Set the cable box to the channel you want to watch.

Selecting a language

(Canadian model only)

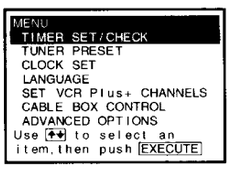


If you prefer French to English, you can change the on-screen display language.

When you set up your VCR for the first time, you can select the on-screen display language using the EASY SET UP button (pages **11**, **13**, **15**, **17** and **19**). You can also change the language using the menu.

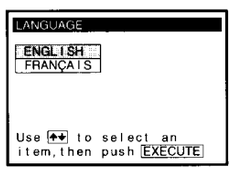
1 **Press MENU.**

The main MENU appears on the TV screen.



2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to LANGUAGE, then press EXECUTE.**

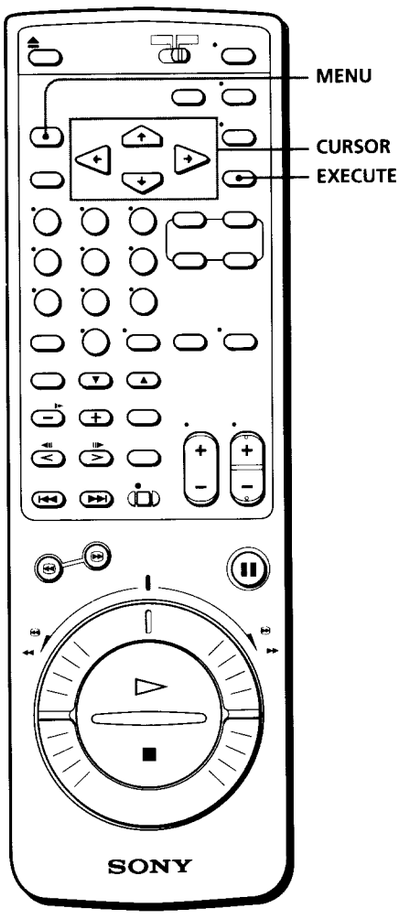
The LANGUAGE menu appears on the TV screen.



3 **Using the CURSOR (↑/↓) buttons, select ENGLISH or FRANÇAIS, then press EXECUTE.**

Setting the clock

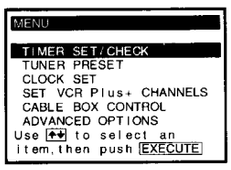
Set the time and date to use the timer feature for recording programs. When you set up your VCR for the first time, you can set the clock using the EASY SET UP button (pages **11**, **13**, **15**, **17** and **19**). You can also set the clock using the menu.



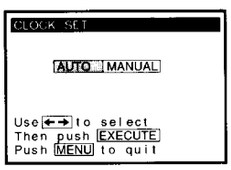
Using the Auto Clock Set feature

Some TV and cable channels have started to transmit time signals with their broadcasts. Your VCR can pick up this time signal to automatically set the clock. After completing the steps below, when you turn off the VCR, it will automatically search for a channel that carries a time signal and set the clock. The Auto Clock Set feature only works if a channel in your area is broadcasting a time signal. If broadcasters in your area are not yet sending time signals, set the time manually (page **24**).

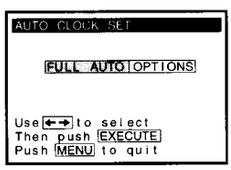
1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to CLOCK SET, then press EXECUTE.**
The CLOCK SET menu appears on the TV screen.



3 **Press the CURSOR (←/→) buttons to select AUTO, then press EXECUTE.**
The AUTO CLOCK SET menu appears on the TV screen.

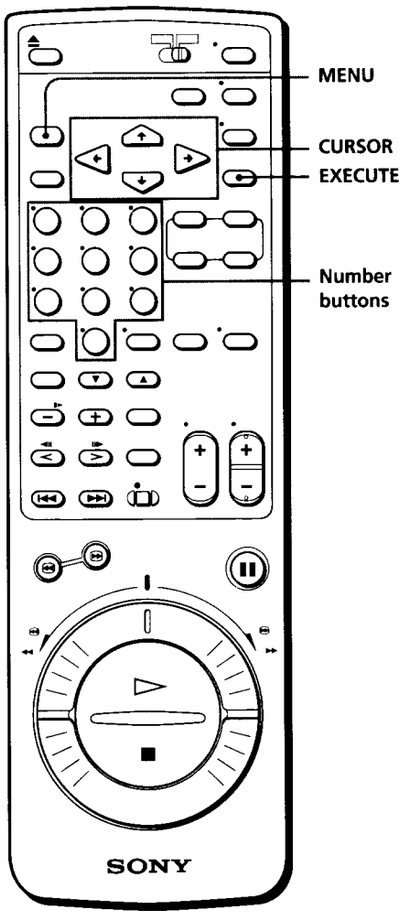


4 **Press the CURSOR (←/→) buttons to select FULL AUTO, then press EXECUTE.**

5 **To activate the Auto Clock Set function, turn the VCR off.**
The VCR automatically sets the clock.
The VCR automatically searches for a channel that carries a time signal and sets your time zone and daylight saving time (if applicable).
If your clock sets, but displays the wrong time zone or daylight saving time, you can adjust these settings without turning off the Auto Clock Set feature (page **23**).

Notes

- The clock cannot be set automatically if you don't receive a channel that carries a time signal in your area. If so, set the clock manually (page **24**).
- If there are only a few channels in your area that carry time signals, setting the clock automatically may take up to about 30 minutes. If nothing happens even after you wait about 30 minutes, set the clock manually.
- The menu disappears automatically if you don't proceed for more than one minute.



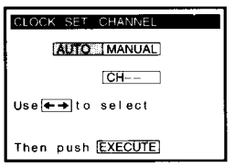
Note

- If you use both the cable box control feature and the Auto Clock Set feature, the VCR automatically changes channels on the cable box, until a channel that carries a time signal is found, whenever you turn off the VCR.
  If you want to stop the search, change channel of the cable box with the channel buttons either on the VCR or on the remote commander.
  If you don't receive a channel that carries a time signal in your area, using the Manual Clock Set stops the automatic channel search.
  If the Auto Clock Set feature is not in use, the channel search is not performed.

If the clock is not activated

1 **Follow steps 1 to 3 in "Using the Auto Clock Set feature."**

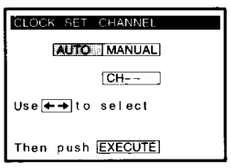
2 **Press the CURSOR (←/→) buttons to select OPTIONS in the AUTO CLOCK SET menu, then press EXECUTE.**
The CLOCK SET CHANNEL menu appears.

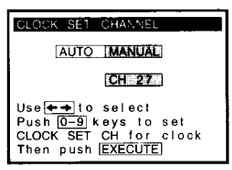


3 **Press the CURSOR (←/→) buttons to select AUTO or MANUAL.**

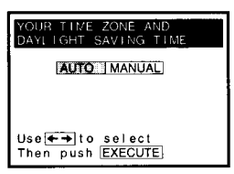
- If you select AUTO:
  The VCR automatically searches for a channel that carries a time signal.
- If you select MANUAL:
  Set a channel that carries a time signal using the number buttons.
  Use this option if you know that channel.

Most PBS member stations broadcast a time signal.
For the fastest response, set the VCR to your local PBS station.





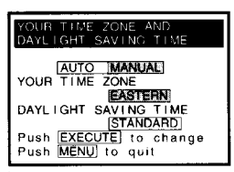
4 **Press EXECUTE.**
The YOUR TIME ZONE AND DAYLIGHT SAVING TIME menu appears.

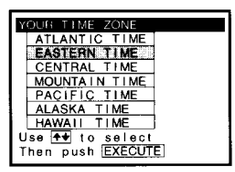


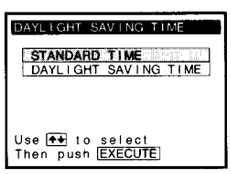
5 **Press the CURSOR (←/→) buttons to select AUTO or MANUAL.**

- If you select AUTO:
  The VCR automatically sets your time zone and daylight saving time (if applicable).
- If you select MANUAL:

1 Press EXECUTE, then set the time zone of your area using the CURSOR (↑/↓) buttons.
2 Press EXECUTE, then select STANDARD TIME or DAYLIGHT SAVING TIME using the CURSOR (↑/↓) buttons.

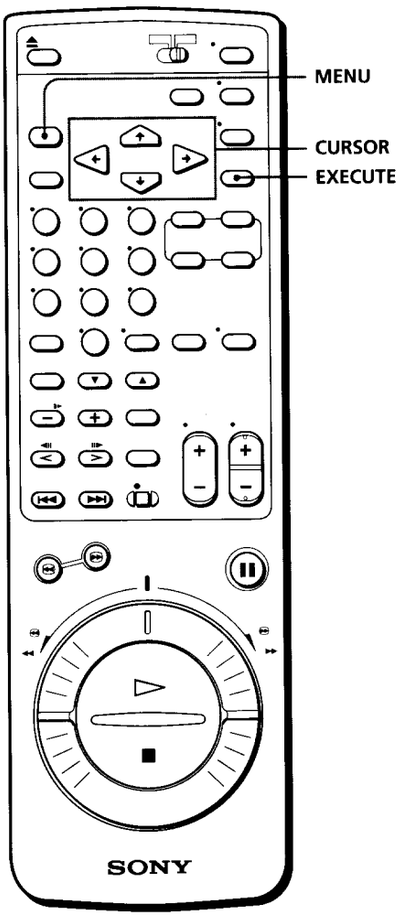






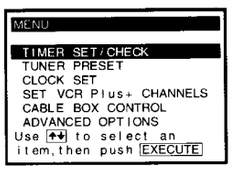
6 **Press EXECUTE.**

7 **To activate the Auto Clock Set function, turn the VCR off.**

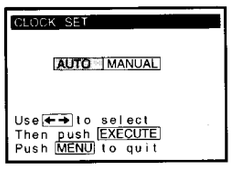


Using the Manual Clock Set

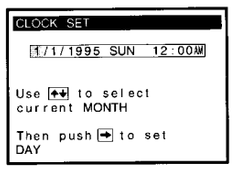
1 **Press MENU.**
The main MENU appears on the TV screen.



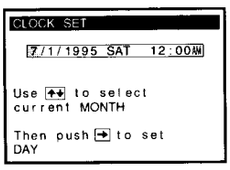
2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to CLOCK SET, then press EXECUTE.**



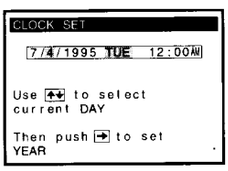
3 **Press the CURSOR (←/→) buttons to select MANUAL, then press EXECUTE.**



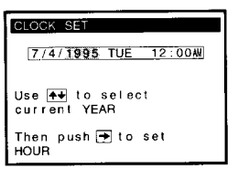
4 **Set the month using the CURSOR (↑/↓) buttons.**



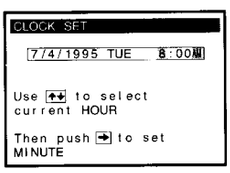
5 **Press CURSOR → to highlight the day and set the day using the CURSOR (↑/↓) buttons.**
The day of the week is set automatically.



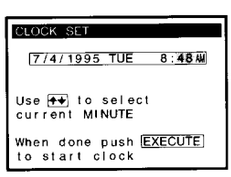
6 **Press CURSOR → to highlight the year and set the year using the CURSOR (↑/↓) buttons.**



7 **Press CURSOR → to highlight the hour and set the hour using the CURSOR (↑/↓) buttons.**



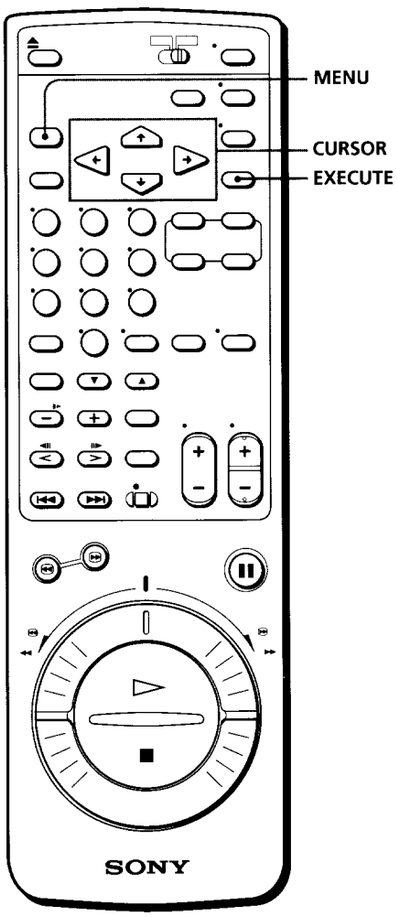
8 **Press CURSOR → to highlight the minutes and set the minutes using the CURSOR (↑/↓) buttons.**



9 **Press EXECUTE to start the clock.**

Presetting channels

(Skip this section if you are using cable box control.)



Tip

- When receiving a VHF, UHF or CATV channel, the display changes as follows each time you press the DISPLAY button.

  Channel number, program name, and station's call letters (if the broadcaster sends those services),
  ↓
  date, time, remaining tape length, and time counter.

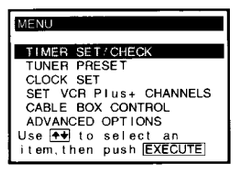
This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and unscrambled CATV channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting. Then, if there are any unwanted channels, disable them manually. If you have decided which channels you wish to preset, set them directly using manual presetting.
When you set up your VCR for the first time, you can preset the channels using the EASY SET UP button (pages **11**, **13**, **15**, **17** and **19**). You can also preset the channels using the menu.

Before you start...

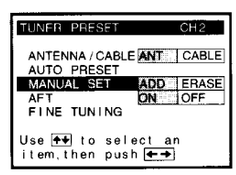
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VTR to display the VTR indicator in the VCR's display window.
- Press INPUT SELECT so that a channel number appears in the VCR's display window.

Presetting all receivable channels automatically

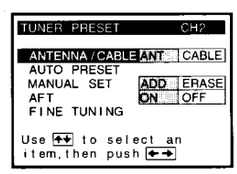
1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to TUNER PRESET, then press EXECUTE.**
The TUNER PRESET menu appears on the TV screen.



3 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to ANTENNA/ CABLE.**



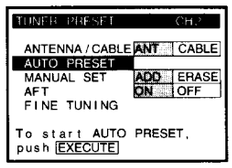
4 **Select ANT or CABLE using the CURSOR (←/→) buttons:**

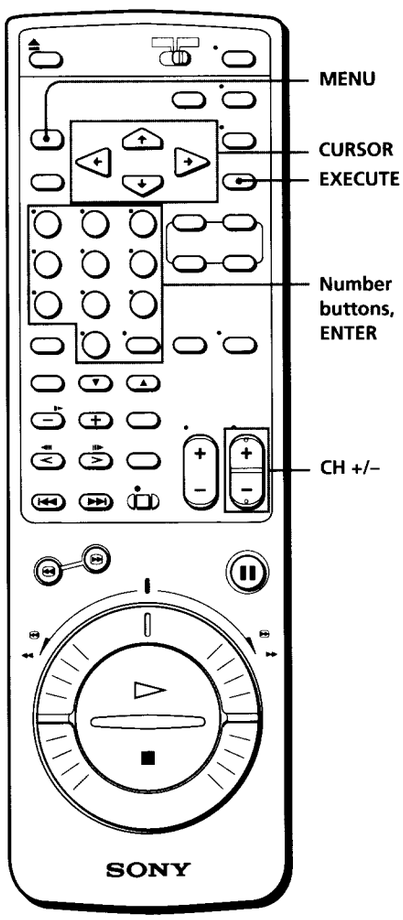
- To preset cable TV channels, select CABLE.
- To preset VHF and UHF channels, select ANT.

(continued)

Presetting channels (continued)

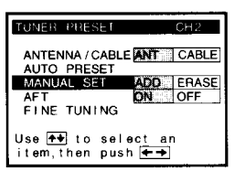
5 **Press the CURSOR (↑/↓) buttons to move the cursor (▮) to AUTO PRESET, then press EXECUTE.**
All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.



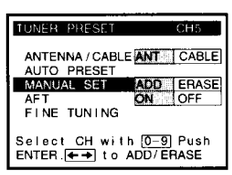


Presetting/disabling channels manually

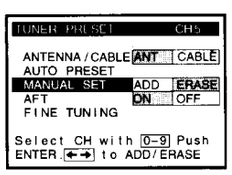
1 **Display the TUNER PRESET menu.**
For instructions, follow steps **1** and **2** in "Presetting all receivable channels automatically."


TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ↑↓ to select an item, then push ←→

2 **Select the channel to preset or disable:**
- To preset a channel, enter the channel number by pressing the number buttons then ENTER.
- To disable a channel, select the channel number by pressing CH +/–.


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0–9 Push ENTER. ←→ to ADD/ERASE

3 **Set MANUAL SET to ADD or ERASE, using the CURSOR (←/→) buttons:**
- To preset a channel, select ADD.
- To disable a channel, select ERASE.


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0–9 Push ENTER. ←→ to ADD/ERASE

4 **Repeat steps 2 and 3 to preset or disable channels as required, then press EXECUTE.**

Cable TV channel assignment

Cable TV systems use letters or numerals to designate channels. This VCR is designed to correspond with standard cable systems. The chart below shows the channel numbers on this VCR and the corresponding cable TV channels. Note that the channel number assignment shown in the chart may not correspond to the channel number used by your local cable company. Check with your local cable TV company for more information on the available channels.

Number on this VCR	*1*	*2*	*3*	...	*12*	*13*	*14*	*15*	*16*	*17*
Cable TV channel	A-8	2	3	...	12	13	A	B	C	D

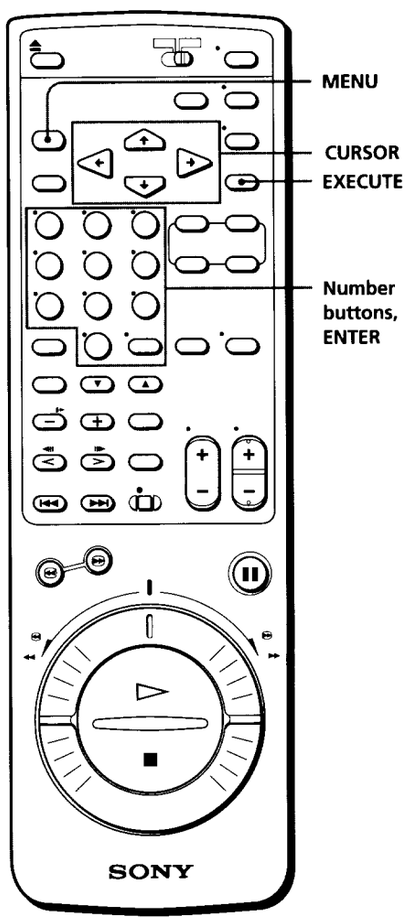
18	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*	*31*
E	F	G	H	I	J	K	L	M	N	O	P	Q	R

32	*33*	*34*	*35*	*36*	*37*	*38*	...	*93*	*94*	*95*	*96*	*97*	*98*
S	T	U	V	W	W+1	W+2	...	W+57	W+58	A-5	A-4	A-3	A-2

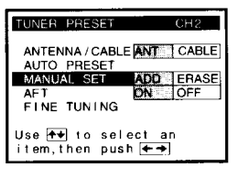
99	*100*	*101*	...	*124*	*125*
A-1	W+59	W+60	...	W+83	W+84

If the picture is not clear

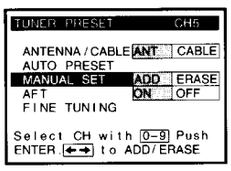
Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you may also use the manual tuning function.



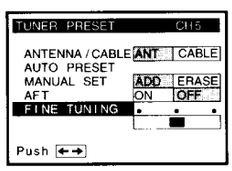
1 **Display the TUNER PRESET menu.**
For instructions, follow steps **1** and **2** in "Presetting all receivable channels automatically."


TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ↑↓ to select an item, then push ←→

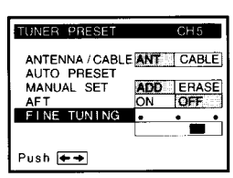
2 **Select the channel you want to fine-tune by pressing the number buttons and then ENTER.**


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0-9 Push ENTER ←→ to ADD/ERASE

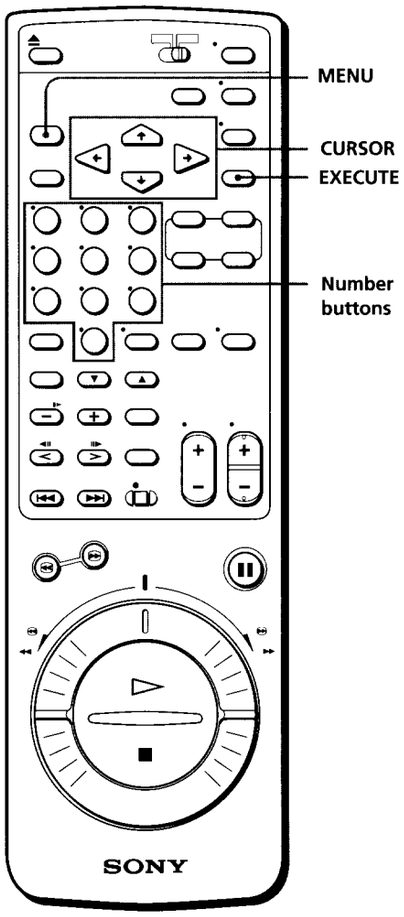
3 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to FINE TUNING.**
The fine tuning meter appears.



4 **Press the CURSOR (←/→) buttons to get a clearer picture, then press EXECUTE.**
Note that the AFT setting switches to OFF.



Setting up cable box control

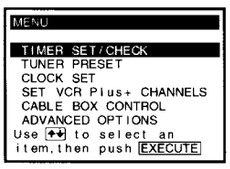


Your VCR includes a cable box control feature which allows the VCR to control most brands of cable boxes via the Cable Mouse. With cable box control, the VCR controls channels on the cable box for timer recording. You can also use the VCR's remote commander to change channels on the cable box whenever the cable box is turned on even if the VCR is turned off. To use cable box control, you need to connect the Cable Mouse (page **10**) and set the code number and output channel.

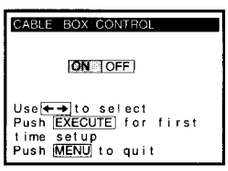
This VCR is programmed with codes necessary to control channel selection on most brands of cable boxes at the time this VCR was manufactured. It is possible that new cable boxes may be introduced that cannot be controlled with this VCR's Cable Mouse. If you have a cable box that is incompatible with this VCR, contact your cable operator — they may be able to provide you with a compatible cable box.

When you set up your VCR for the first time, you can set up the cable box control using the EASY SET UP button (pages **11**, **13**, **15**, **17** and **19**). You can also set up by using the menu.

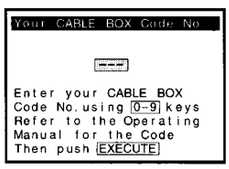
1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to CABLE BOX CONTROL, then press EXECUTE.**
The CABLE BOX CONTROL menu appears.

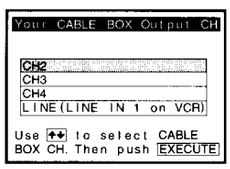


3 **Press the CURSOR (←/→) buttons to select ON, then press EXECUTE.**


Your CABLE BOX Code No.

Enter your CABLE BOX Code No. using 0-9 keys
Refer to the Operating Manual for the Code
Then push EXECUTE

4 **Enter the cable box code number by pressing the number buttons, then press EXECUTE.**
Find your cable box code number from the chart on the following page.



5 **Select the output channel for cable box using the CURSOR (↑/↓) buttons, then press EXECUTE.**

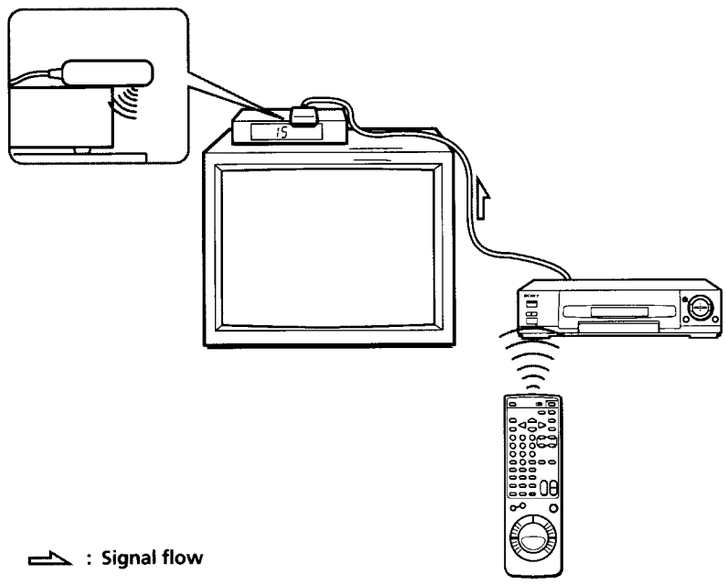
Cable box brands and the corresponding cable box code numbers

If more than one code number is listed, try entering them one by one, until you come to the correct code for your equipment.

Cable box brand	Code numbers
ABC	018, 022, 024 028, 217
Antronix	218
Archer	033, 050, 164 218
BBT	278
Cable Star	067
Cabletenna	033
Cable time	172, 282, 388, 459
Century	164
Citizen	164, 326, 327
Clyde Cablevision	097
Colour Voice	036, 042
Comband	243, 244
Comtronics	051, 071
Decsat	434
Diamond	046
Eagle Comtronics	051
Eastern	013, 285
Electricord	089
Electus	055
Filmnet	454
Garrard	164
GC Electronics	027, 067 341
GE	243, 244
GEC	097
Gemini	026, 068, 081 253
General Instrument	022, 287
Hamlin	020, 031, 045 270, 284
Hitachi	022
Jasco	164, 326
Jerrold	014, 022, 025 026, 035, 037 058, 109, 287
Linsay	451
Macom	044
Magnavox	038, 043 080, 345
Memorex	011
Movie Time	089, 167 214
Northcoast	325
NSC	074, 081 167, 214
Oak	018, 030 259
Omniview	382
Panasonic	032, 118
Paragon	011
Philips	036, 038 039, 040 041, 042 071, 301
Philips ECG	253
Pioneer	034, 155 271
Popular Mechanics	411
Pulsar	011
RCA	032
Realistic	218
Regal	031, 270 284, 290
Regency	013
Rembrandt	081
RK	315, 317
Samsung	051, 155
Satbox	386
Scientific Atlanta	017, 019 028, 288 338
Sharp	324
Signal	051
Signature	022
SL Marx	051
Spectravision	069
Sprucer	032, 318
Standard Components	107, 166
Starcom	014, 026 058, 109
Stargate	026, 051
STS	167
Sylvania	012
T-Cable Teletext	116
Tandy	269
Tatung	108
Teknica	157
TeleCaption	232
Teleservice	292
Texscan	012, 107
TFC	321
Timeless	429
Tocom	023, 024 070
Toshiba	011
Tudi	297
TV86	074
TV COM	018, 030 259
Uniden	236
Unika	033, 164 218
United Artists	018
United Cable	014
Universal	033, 050 067, 088 089, 164 202, 218 333
Videoway	261
Vidtech	255
Viewstar	038, 071 074, 122 222, 269 300
Westminster cable	116
Zenith	011, 065

Setting up cable box control (continued)

Tips for normal viewing



- Place the Cable Mouse so that it hangs out over the cable box front.
- Position the cable box away from the VCR.
- Do not place the cable box on top of the VCR.
- Point the remote commander at the VCR, not at the cable box.

Note

- Make sure to turn off the VCR when you plug in or unplug the Cable Mouse. If you unplug the Cable Mouse and plug it in again, turn on the VCR before you use the cable box control feature.

To check the cable box control setting

1 Press CH +/– on the remote commander. Does the channel indicator on the cable box change? (Point the remote commander at the VCR, not at the cable box.)

2 Press all 10 number buttons (0 to 9) on the remote commander. Does the channel indicator on the cable box change?

If the answer to both **1** and **2** is "yes," you have made the correct setting.

If you cannot get your VCR to control the cable box

✓ Check that the Cable Mouse is connected to the CABLE BOX CONTROL jack on the VCR.

✓ Check the position of the Cable Mouse.

✓ Place the cable box and VCR away from each other. Do not place the cable box on top of the VCR.

✓ Try the setup again making sure to use the correct control code. If the cable box still does not respond you can try other codes.

If your cable box still does not operate with the Cable Mouse, contact your cable company to see if they can provide you with a compatible cable box.

Setting up VCR Plus+

VCR Plus+ is a feature in Sony VCRs that simplifies the task of programming the VCR to make timer recordings.

How VCR Plus+ works

Whenever you want to record a TV program, all you need to do is look up the program's "PlusCode," a number assigned to each program that's published in the TV section of most newspapers, cable TV listings, and even *TV GUIDE* magazine. Then, just enter the PlusCode of the program you want and the VCR is automatically programmed to record that show. It's that simple. With VCR Plus+, you no longer have to go through a lengthy and often repetitive procedure when you set start and stop times, channel numbers, and dates. All this information is automatically sent to your VCR when you enter the program's PlusCode.

How to set up your VCR

Setting up your VCR involves coordinating the TV channel number (the number you turn to on your TV or VCR to watch a program) with the guide channel (the number that's assigned to that channel in your program guide). To get the guide channel numbers, find the "Channel Line-up Chart" in the program guide for your area that features VCR PlusCodes. It usually looks like the example to the left.

For each channel your VCR receives, use the Channel Line-up Chart to check that the channel numbers match. For example, if HBO is listed in the Channel Line-up Chart on channel 33, and your VCR receives HBO on channel 15, you need to coordinate these numbers using the following procedure. For channels in which the numbers are the same (for example, if your VCR receives HBO on channel 33, and the guide channel number is 33), you can skip this procedure.

(continued)

Example of "PlusCode"

PlusCode

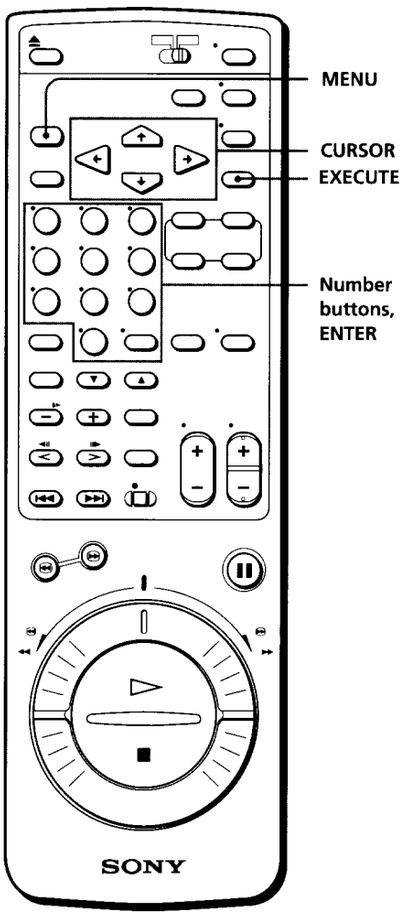
5:30 14 MOVIE — Musical (2hrs.) 33044
2 SPORT — Golf (1hr. 25min.) 42060
CNN — WS 9974
6:30 2 3 4 DRAMA — Comedy (2hrs.) 17390
5 SCIENCE AND TECHNOLOGY
(1hr. 15min.) 73457

Example of "Channel Line-up Chart"

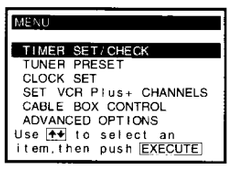
CABLE CH	CABLE TV	VCR Plus+ GUIDE CH
16	AMC American Movie Classics	35
17	BRV Bravo (program grid only)	54
20	CNN Cable News Network	42
21	CSP C-SPAN	28
22	DIS The Disney Channel	53
25	DSC The Discovery Channel	37
34	ESN ESPN	34
35	FAM The Family Channel	47
5	HBO Home Box Office	33
27	LIF Lifetime	46
29	MAX Cinemax	45
30	MTV Music Television	48
31	NIK Nickelodeon	38
38	SC Sports Channel	59
39	SCA Sports Channel America	70
45	SHO Showtime	41
17	TBS TBS SuperStation	43
44	TMC The Movie Channel	58
49	TNN The Nashville Network	49
50	TNT Turner Network Television	52
51	USA USA Network	44

SAMPLE

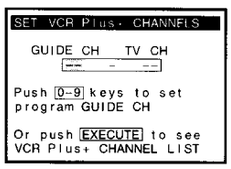
Setting up VCR Plus+ (continued)



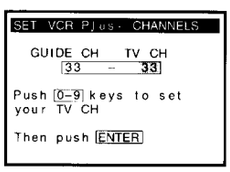
1 **Press MENU.**
The main MENU appears on the TV screen.



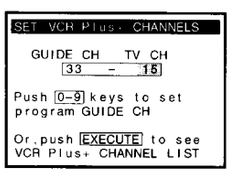
2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to SET VCR Plus+ CHANNELS, then press EXECUTE.**
The SET VCR Plus+ CHANNELS menu appears and the GUIDE CH column is highlighted.

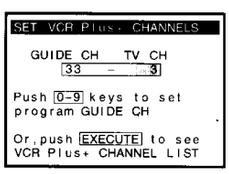


3 **Enter the channel number assigned in the program guide and press ENTER.**
The TV CH column is highlighted.



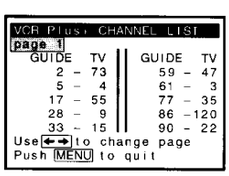
4
- **If you made Hookup 1, 2, or 3, enter the actual number on your TV (and VCR) and press ENTER.**
- **If you made Hookup 4, enter the cable output channel (usually 2, 3, or 4) and press ENTER.**
- **If you made Hookup 5, enter the actual number on your TV (and VCR) for an unscrambled channel and press ENTER. For a scrambled channel, enter the cable box output channel (usually 2, 3, or 4) and press ENTER.**





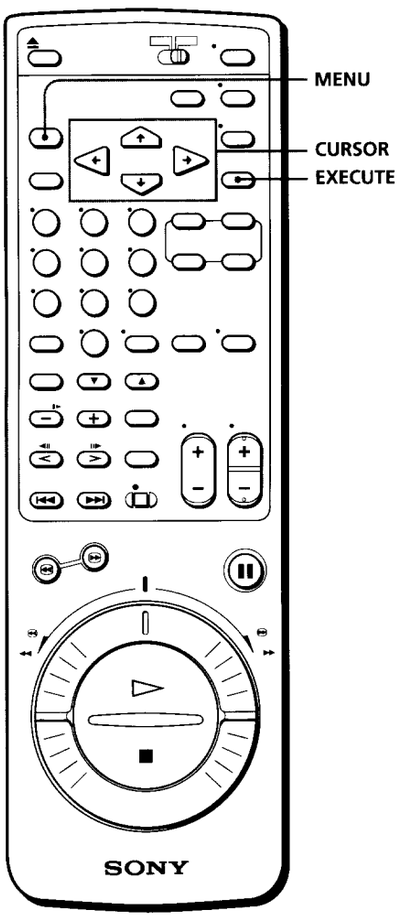
5 **Repeat steps 3 and 4 for each channel whose numbers don't match.**

6 **When you have set all channels, press EXECUTE to confirm your channel settings.**



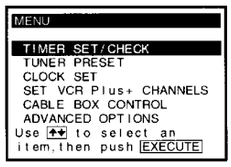
7 **When you've finished, press MENU to exit.**

Using the ADVANCED OPTIONS

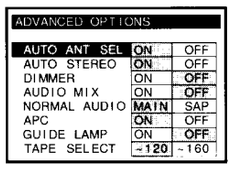


The ADVANCED OPTIONS allows you to make a number of optional setup choices. For a list of menu choices, see the table on the following page.

1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to ADVANCED OPTIONS, then press EXECUTE.**
The ADVANCED OPTIONS menu appears on the TV screen.



3 **Press the CURSOR (↑/↓) buttons to move the cursor (I) to the desired menu choice.**

4 **Set the item to the desired setting using the CURSOR (←/→) buttons.**

5 **Press EXECUTE to return to the original screen.**

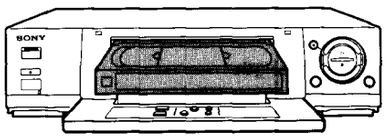
Menu choices

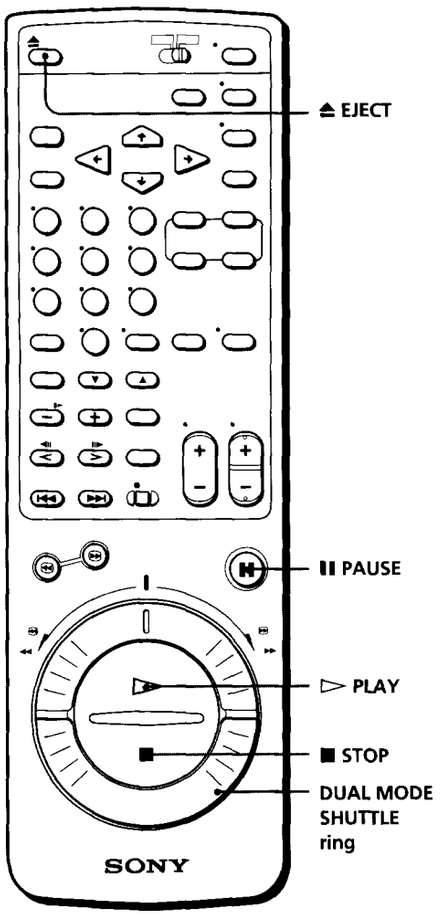
Initial settings are indicated in bold letters.

Menu option	Set this option to
AUTO ANT SEL	• **ON** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the VCR channel (channel 3 or 4). • OFF if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the VCR input.
AUTO STEREO	• **ON** to receive stereo programs. • OFF to reduce noise in a stereo program. Although the sound may improve, the sound becomes monaural. For details, see page **40**.
DIMMER	• ON to make the display window dim. • **OFF** to make it brighter.
AUDIO MIX	• ON to listen to the sound recorded on the hi-fi audio track and the normal audio track simultaneously. The AUDIO MONITOR button becomes inoperative. • **OFF** to select the sound using the AUDIO MONITOR button. For details, see page **37**.
NORMAL AUDIO	• **MAIN** to record the main sound on both the hi-fi and normal audio tracks. • SAP to record the SAP (Second Audio Program) sound on the normal audio track. The main sound is recorded on the hi-fi audio track. For details, see page **40**.
APC	• **ON** to activate the APC (Adaptive Picture Control) function, that improves recording and playback quality. • OFF to deactivate it. For details, see page **50**.
GUIDE LAMP	• ON to illuminate the borders of the dual mode shuttle ring and the buttons on the VCR which you can operate in the present condition, telling you what you can do with your VCR. • **OFF** to turn them off.
TAPE SELECT	"**~120**" or "~160" to select the length of the tape, allowing to display the remaining tape counter. For details, see page **36**.

Basic Operations

Playing a tape





Tip

- For further information on searching and playback functions, see "Playing/ searching at various speeds" on page **49**.

Note

- Tapes recorded in LP mode can be played on this VCR, while playback picture quality in modes other than normal forward speed is not guaranteed.

This section shows you how to play back a video tape.

1 ***Turn on your TV and tune in to the VCR:***

- If the TV is connected to the VCR using the audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna cable, set the TV to the channel for the VCR.

2 **Open the drop down panel and insert a tape.**

The VCR turns on automatically. The tape starts playing automatically if its safety tab has been removed.

3 **Press ▷ PLAY to start playing.**

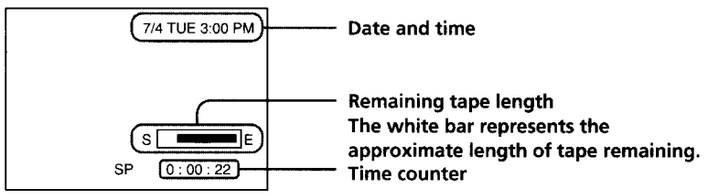
When the tape reaches the end, the VCR automatically rewinds it to the beginning. (The power remains on.)

Additional tasks

To	Press
Stop play	■ STOP
Pause play	II PAUSE
Resume play after pause	II PAUSE or ▷ PLAY
Search forward	Turn the DUAL MODE SHUTTLE (DMS) ring to ⏩ during playback
Search backward	Turn the DMS ring to ⏪ during playback
Fast-forward the tape	Turn the DMS ring to ▶▶ FF during stop
Rewind the tape	Turn the DMS ring to ◀◀ REW during stop
Eject the tape	⏏ EJECT

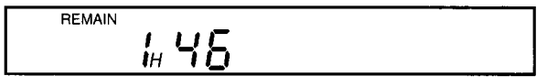
Displaying the date and time, remaining tape length and time counter

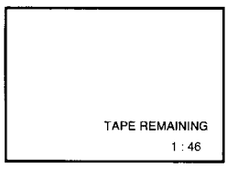
Press DISPLAY to turn the display on or off.



Displaying the remaining tape counter

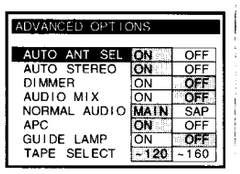
Press COUNTER/REMAIN to display the remaining tape counter in the display window. To display it on the TV screen, press DISPLAY to turn the display on, then press COUNTER/REMAIN. Each time you press COUNTER/REMAIN, the time counter and the remaining tape counter appear alternately.



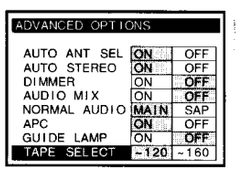


When you use the tape with more than 2-hour recording, select "~120" or "~160" from the menu.

1 Press MENU and select ADVANCED OPTIONS.



2 Set TAPE SELECT to "~120" or "~160" using the CURSOR (↑/↓/←/→) buttons.



3 Press EXECUTE to store the setting.

Notes

- When you insert a tape with a short tape length such as T-20, T-30 or a non-standard commercially available tape, the remaining tape length may not be correct.
- The display will not appear during still mode or slow-motion playback.

Using the time counter

At the point on a tape that you want to find later, press COUNTER RESET to reset the counter to "0H00M00S." When you rewind or advance the tape to this point, refer to the counter.

Notes

- When a tape is reinserted, the counter returns to "0H00M00S."
- The counter will not work on tape portions with no recording.

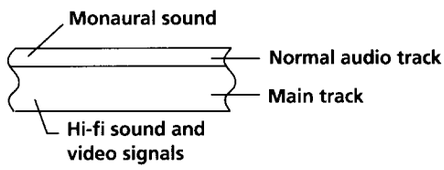
Playing stereo and bilingual programs

Press AUDIO MONITOR to select the desired sound. Each press of the button changes the display on the VCR.

To listen to a		VCR's display window
Stereo tape	**Bilingual tape**	
Stereo	Left and right channels	STEREO
Left channel	Left channel	L
Right channel	Right channel	R
Monaural on normal audio track	Sound on normal audio track (SAP)	No indicator appears

How sound is recorded on a video tape

This VCR records sound onto two different tracks. High-fidelity sound (usually stereo) is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.



To listen to hi-fi and normal audio at the same time

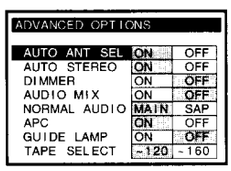
Notes

- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting.
- To play a tape in stereo, you must use the A/V connections.
- If AUDIO MIX in the ADVANCED OPTIONS is set to ON, the AUDIO MONITOR button doesn't work.

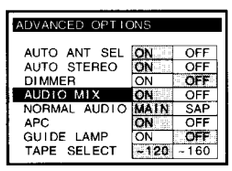
Note

- If AUDIO MIX remains ON, the AUDIO MONITOR button remains inoperative.

1 Press MENU and select ADVANCED OPTIONS.

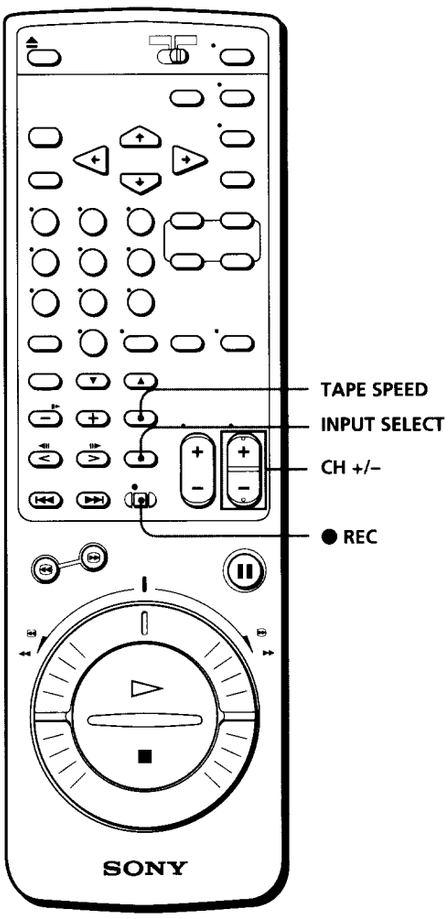


2 Set AUDIO MIX to ON using the CURSOR (↑/↓/←/→) buttons.
The AUDIO MONITOR button becomes inoperative, and the sound you hear is mixed.



3 Press EXECUTE to store the setting.
After playing the tape, reset AUDIO MIX to OFF.

Recording TV programs



Note

- If you insert a tape with its safety tab removed, the VCR starts playing. To record on this tape, cover the tab hole.

Tip

- To select channels, you can also use the number buttons on the remote commander. Enter the desired channel number using the number buttons, then press ENTER.

This section shows you how to record TV programs in the most basic way: manual recording. With manual recording, you start the VCR recording when the program begins, then stop it when the program ends. The VCR also provides the following ways of recording.

- Manually start recording, then stop it automatically—"Recording using the quick timer" (page **39**)
- Automatically start and stop recording—"Recording TV programs using the timer" (page **42**)
- Automatically start and stop recording just by entering the "Plus Code"—"Recording TV programs using VCR Plus+" (page **45**)

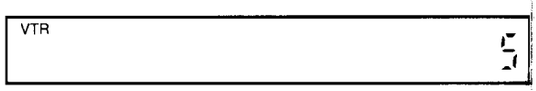
1 **Turn on your TV and tune in to the VCR:**

- If the TV is connected to the VCR using the audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna cable, set the TV to the channel for the VCR.

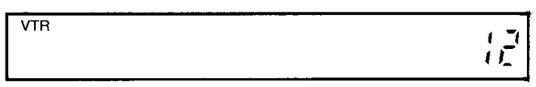
When using a cable box, turn it on.

2 **Open the drop down panel and insert a tape with its safety tab in place.**

3 **Press INPUT SELECT until a channel number appears in the VCR's display window.**

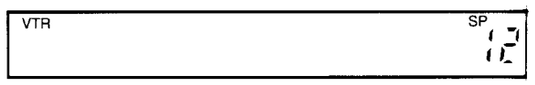


4 **Select the desired channel by pressing CH +/–.**



5 **Select the tape speed, SP or EP, by pressing TAPE SPEED.**

See "To select tape speeds" on the following page.



6 **Start recording by pressing ● REC .**

When the tape reaches the end, the VCR automatically rewinds it to the beginning.

Tips

- To cut out an unwanted scene while recording, press ❚❚ PAUSE, turn the DUAL MODE SHUTTLE ring on the VCR to rewind the tape to the beginning of the unwanted scene, then press ❚❚ PAUSE to resume recording.
- The display appears on the TV screen indicating information about the tape, but the information will not be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.

Note

- If you've inserted a tape with its safety tab removed, the VCR ejects it when you press ● REC.

To stop recording

Press ■ STOP.

To select tape speeds

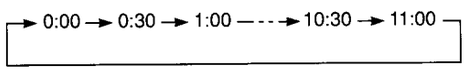
When recording, select either SP or EP. EP provides recording time three times as long as SP. However, SP provides better picture quality. You can mix SP and EP on the same tape. When playing back, the VCR automatically detects the tape speed. See the table below for the maximum recording/playback time in each speed.

Tape type	Maximum recording/playback time	
	SP	EP
T-160	2 hrs. 40 min.	8 hrs.
T-120	2 hrs.	6 hrs.
T-60	1 hr.	3 hrs.
T-30	30 min.	1 hr. 30 min.

Recording using the quick timer

The quick timer enables you to record for a specified period of time in intervals of 30 minutes. Once you specify the recording time, the VCR automatically stops recording. Before you begin, check that the clock is set correctly.

After you start recording, press QUICK TIMER until the desired duration appears in the display window. The TIMER indicator on the VCR lights up. Each press increases the recording duration in increments of 30 minutes as shown below.



The recording duration decreases minute by minute to 0:00, then the VCR turns off automatically.

To stop recording

Press ■ STOP.

To extend the recording duration while recording

Press QUICK TIMER until the desired duration appears in the display window.

Watching a TV program while recording another

You can watch a TV program and record another at the same time.

1 Press TV/VTR to turn off the VTR indicator in the display window.
2 If the TV is connected to the VCR using the audio/video cable, set the TV to TV input.
If the TV is connected to the VCR using only the antenna cable, skip this step.
3 Select the desired channel on the TV.

Recording stereo and bilingual programs

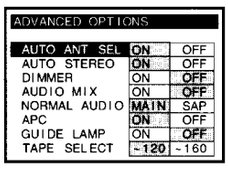
Stereo programs

This VCR automatically records stereo programs in stereo. When stereo programs are received, the STEREO indicator on the VCR lights up. If noise occurs while receiving a stereo program, record the program in monaural. Follow the steps below.

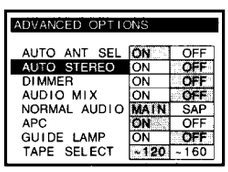
Bilingual programs

Normally, this VCR records main sound on both main and normal audio tracks. To record SAP (Second Audio Program) sound on normal audio track, follow the steps below.

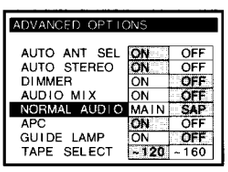
1 Press MENU and select ADVANCED OPTIONS.



2 • To record stereo programs in monaural:
Set AUTO STEREO to OFF using the CURSOR (↑/↓/←/→) buttons.



• To record SAP sound on normal audio track:
Set NORMAL AUDIO to SAP using the CURSOR (↑/↓/←/→) buttons.



3 Press EXECUTE to store the setting.

Tip

- For information on how the VCR records sound, see "How sound is recorded on a video tape" on page **37**.

Note

- Set NORMAL AUDIO to MAIN when not recording SAP sound, or no sound is recorded on the normal audio track. If no sound is recorded on the normal audio track and you play the tape on a mono VCR, you will see only video—no audio will be heard. However, you will receive both audio and video if you play back this tape on a stereo VCR.

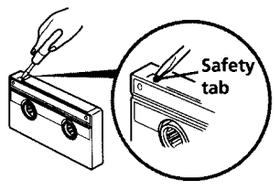
To monitor SAP sound while recording

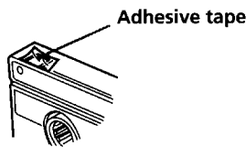
Press AUDIO MONITOR until the SAP indicator lights up in the display window.

Saving a recording

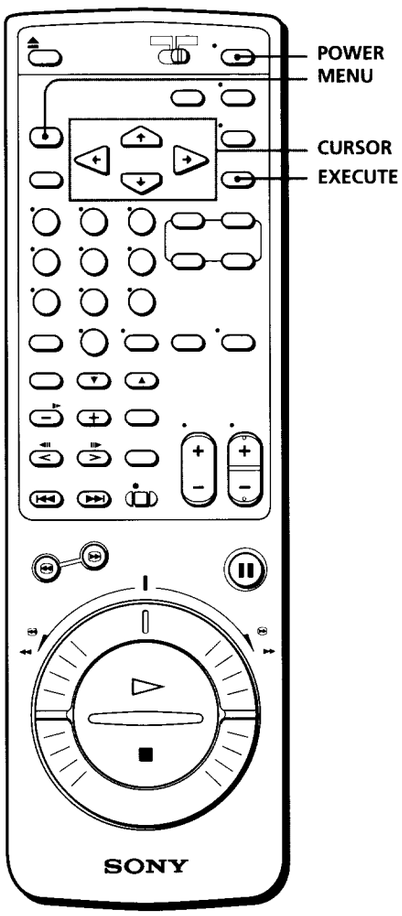
Video tapes have a safety tab to protect against accidental recording. To prevent accidental erasure of a recording, break off the safety tab with a screwdriver or other tool. A tape with its safety tab removed ejects if you try to record on it.

To record on a tape with its safety tab removed, cover the tab hole with adhesive tape.





Recording TV programs using the timer



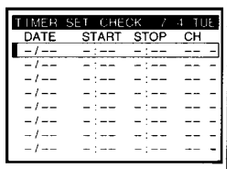
This section shows you how to let the VCR automatically start and stop recording TV programs. You can preset up to eight programs within a one month time frame. If VCR Plus+ is available in your area, see the section "Recording TV programs using VCR Plus+" on page **45** for easier timer recording.

Before you start...

- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR. When using a cable box, turn it on.

1 **Press MENU and select TIMER SET/ CHECK.**

If the clock needs to be set, "Please set the clock" appears on the screen and the VCR automatically enters the clock setting mode.

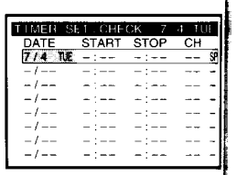


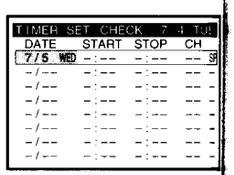
2 **Set the date to start recording:**

1 Press CURSOR ➡.
Make sure today's date is highlighted. If it isn't, reset the clock to the correct time.

2 Press CURSOR ⬆ to set the month and date.
The day of the week is set automatically.

To record the same program every day or the same day once a week, see "Daily/ weekly recording" on page **44**.

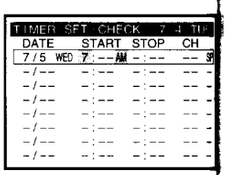


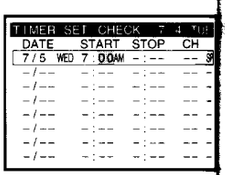


3 **Set the time to start recording:**

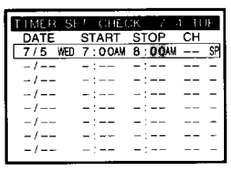
1 Press CURSOR ➡ to highlight the hour under "START," then press the CURSOR (⬆/⬇) buttons to set the hour.

2 Press CURSOR ➡ to highlight the minutes under "START," then press the CURSOR (⬆/⬇) buttons to set the minutes.



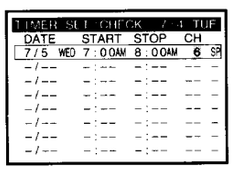


4 **Press CURSOR →, then set the time to stop recording in the same way.**



5 **Press CURSOR →, then press the CURSOR (↑/↓) buttons to select the channel you want to record.**

Only the channels preset in the VCR will appear. When using a cable box, the cable box channels appear.

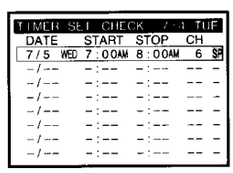


Tips

- To set the channel, you can also use CH +/– or number buttons.
- To record a video source from the LINE IN 1 or 2 jacks, press INPUT SELECT to display "L1" or "L2" in the "CH" position.
- When you set the cable box control to ON, you cannot select "L1" or "L2".

6 **Press CURSOR →, then press the CURSOR (↑/↓) buttons to select the tape speed, SP or EP.**

See "To select tape speeds" on page **39**.



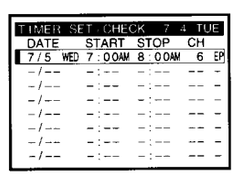
Tip

- To set the recording tape speed, you can also use TAPE SPEED.

7 **To confirm your program, press CURSOR →.**

All the settings stop being highlighted and the cursor (▮) appears in the leftmost column.

To preset another timer setting, move the cursor to the next line using CURSOR ↓ and repeat steps **2** to **7**.



Tip

- To change or correct a setting before confirming it, press CURSOR ← to highlight the item you want to change and reset it.

8 **After making the desired timer settings, press EXECUTE.**

9 **Press POWER to turn off the VCR.**

The TIMER indicator on the VCR lights up and the VCR stands by for recording. When using a cable box, leave it on.

The VCR automatically turns on and starts recording at the preset start time, and turns off at the preset stop time.

To stop recording while recording

Press ■ STOP.

To use the VCR while recording

You can do the following tasks during timer recording.

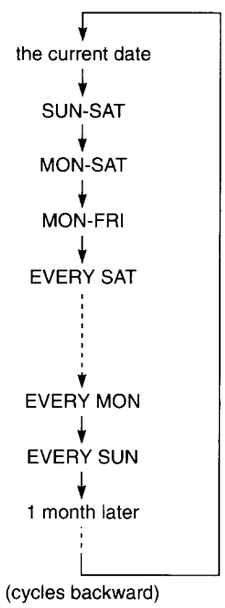
To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV program	TV/VTR (See "Watching a TV program while recording another" on page **40**.)

Using the VCR before timer recording begins

Press POWER to turn on the VCR. The TIMER indicator on the VCR goes off and the VCR is ready for use.

After using the VCR, turn off the VCR again to turn on the TIMER indicator on the VCR. When using a cable box, leave it on. Remember to turn off the VCR before the time you've set the VCR to start recording, or the timer setting will be cancelled.

Daily/weekly recording

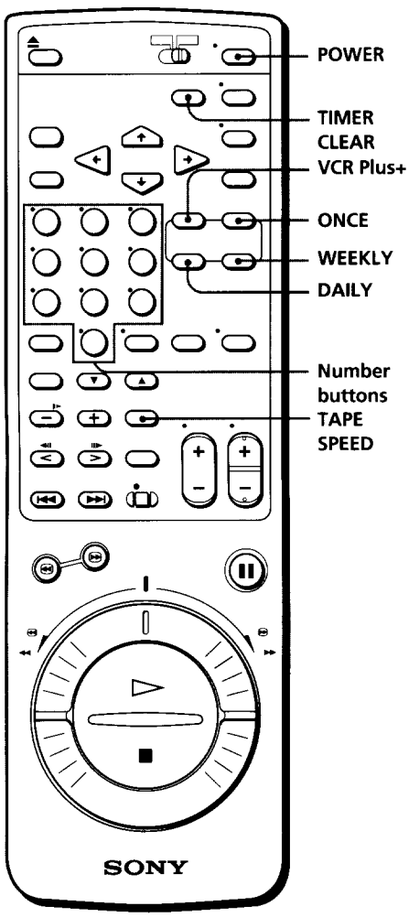


Daily/weekly recording

Daily recording records the same program every day of the week; weekly recording records the same program on the same day, every week.

When you set the date to start recording in step **2** of "Recording TV programs using the timer," press CURSOR ↓ until the desired day appears. Each time you press the button, the indication changes as shown on the left.

Recording TV programs using VCR Plus+



Notes

- You cannot set VCR Plus+ in the following cases:
  - When the VCR is turned off.
  - While recording using the timer or quick timer.
- The timer will not accept settings in the following cases:
  - When you select DAILY for a Saturday and Sunday program.
  - When you select DAILY or WEEKLY for a program more than seven days ahead.
  - When you enter the PlusCode of a program that has already ended.

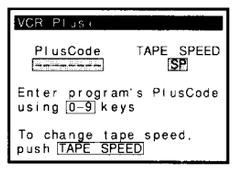
This section shows you another way of timer recording: recording using VCR Plus+. This allows you to record TV programs more easily. Just enter the program's "PlusCode," and the VCR will automatically record the program. You can preset up to eight programs within a one month time frame.

Before you start...

- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR. When using a cable box, turn it on.

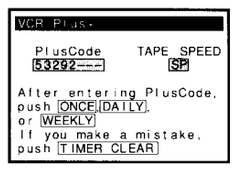
1 **Press VCR Plus+.**

If the clock needs to be set, "Please set the clock" appears on the screen and the VCR automatically enters the clock setting mode.

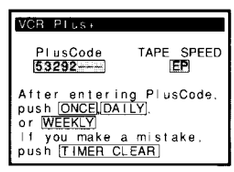


2 **Enter the desired program's PlusCode using the number buttons.**

If you make a mistake, press TIMER CLEAR and enter the PlusCode again.



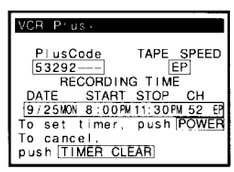
3 **Select the tape speed, SP or EP, by pressing TAPE SPEED.**



4 **Press ONCE, DAILY or WEEKLY according to the following:**

To record the program	Press
Only once	ONCE
Monday to Friday at the same scheduled time	DAILY
Every week at the same scheduled time	WEEKLY

The recording information appears on the TV screen: date, program start and stop times, channel number and tape speed. Check that the information is correct. If it is not, press TIMER CLEAR to cancel. To preset another timer setting, repeat steps **1** to **4**.



(continued)

5 **Press POWER to turn off the VCR.**
The TIMER indicator on the VCR lights up and the VCR stands by for recording. When using a cable box, leave it on. The VCR automatically turns on, records the program and turns off.

To stop recording while recording
Press ■ STOP.

To use the VCR while recording
You can do the following tasks while recording using VCR Plus+.

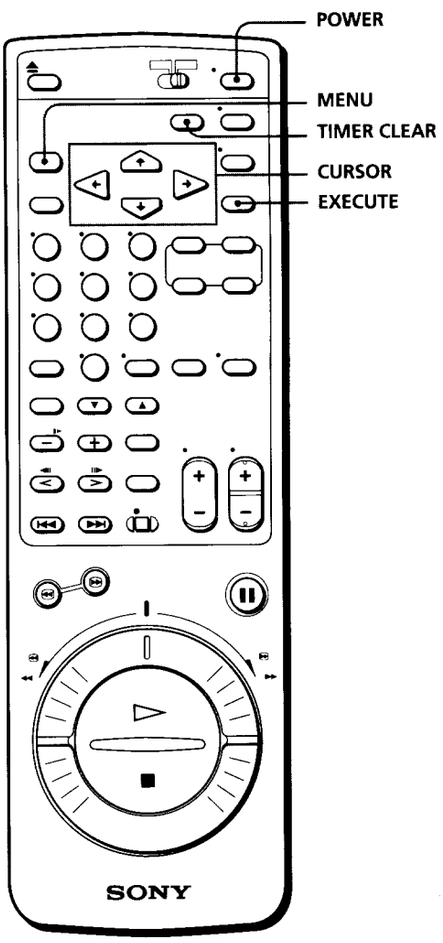
To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV program	TV/VTR (See "Watching a TV program while recording another" on page **40**.)

Using the VCR before recording begins

Press POWER to turn on the VCR. The TIMER indicator on the VCR goes off and the VCR is ready for use.

After using the VCR, turn off the VCR again to turn on the TIMER indicator on the VCR. When using a cable box, leave it on. Remember to reset the VCR to stand by for recording before the time you've set the VCR to start recording, or the timer setting will be cancelled.

Checking/changing/ cancelling timer settings



This section shows you how to check, change and cancel the timer settings after you've stored them in the VCR.

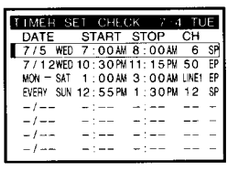
Before you start...

- Turn on your TV and tune in to the VCR.

1 **Press POWER to turn on the VCR.**

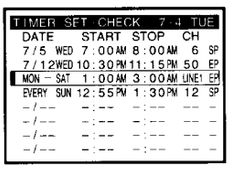
The TIMER indicator on the VCR goes off.

2 **Press MENU and select TIMER SET/ CHECK.**


TIMER SET CHECK 7 : 4 TUE
DATE START STOP CH
7/5 WED 7:00AM 8:00AM 6 SP
7/12WED 10:30PM 11:15PM 50 EP
MON – SAT 1:00AM 3:00AM LINE1 EP
EVERY SUN 12:55PM 1:30PM 12 SP

3 **Check the timer settings:**

- If you do not want to change or cancel the settings, press EXECUTE, then turn the VCR off to return to recording standby.
- If you want to change or cancel the settings, press the CURSOR (↑/↓) buttons to move the cursor (▮) to the setting you want to change or cancel.


TIMER SET CHECK 7 : 4 TUE
DATE START STOP CH
7/5 WED 7:00AM 8:00AM 6 SP
7/12WED 10:30PM 11:15PM 50 EP
MON – SAT 1:00AM 3:00AM LINE1 EP
EVERY SUN 12:55PM 1:30PM 12 SP

4 **Change or cancel the timer setting:**

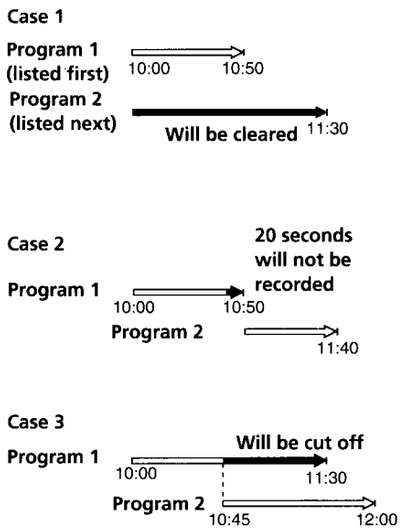
- To change the setting, press the CURSOR (←/→) buttons to highlight the item you want to change, and reset it using the CURSOR (↑/↓) buttons. Then, press CURSOR → to move the cursor to the leftmost column.
- To cancel the setting, press TIMER CLEAR.

5 **Press EXECUTE.**

The VCR returns to the original screen. When there are any other timer settings left in the TIMER SET/CHECK menu, turn off the VCR to return to recording standby.

To check the timer settings during timer recording

Press MENU and select TIMER SET/CHECK. After checking, press EXECUTE to turn off the display.



When the timer settings overlap

The VCR will not record overlapping programs. If any of your timer settings overlap, change the settings.

Case 1: ***If you preset two programs to start recording at the same time...***

The program listed first in the TIMER SET/CHECK menu has priority over the other program. The timer setting of the lower priority program will be erased from the TIMER SET/CHECK menu when the first program begins recording.

Case 2: ***If you preset program 2 to start recording at the same time you preset program 1 to finish recording...***

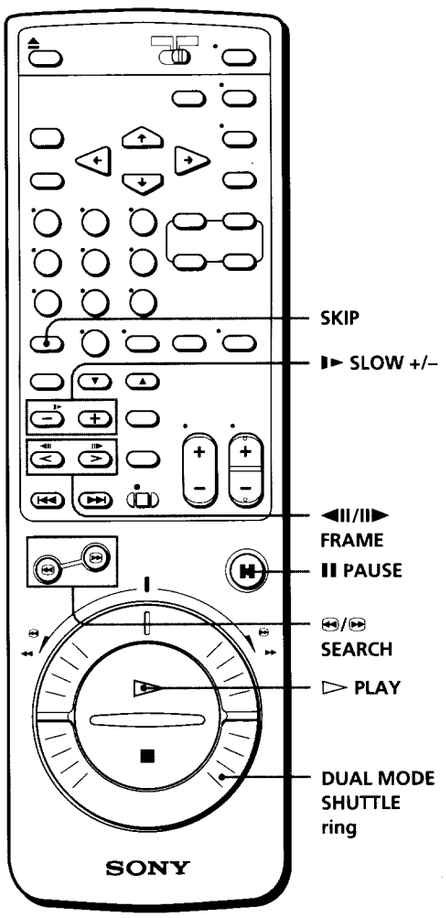
The last 20 seconds of program 1 will not be recorded because the VCR will enter recording pause for program 2 before program 1 is finished.

Case 3: ***If you preset program 2 to start recording before program 1 is finished recording...***

Program 2 will start recording before program 1 has finished.

Additional Operations

Playing/searching at various speeds



Tip

- Adjust the picture using the ▼/▲ TRACKING NORMAL/SLOW STILL ADJUST buttons if:
  - Streaks appear while playing in slow motion.
  - Bands appear on the top or bottom while pausing.
  - The picture shakes while pausing.

Note

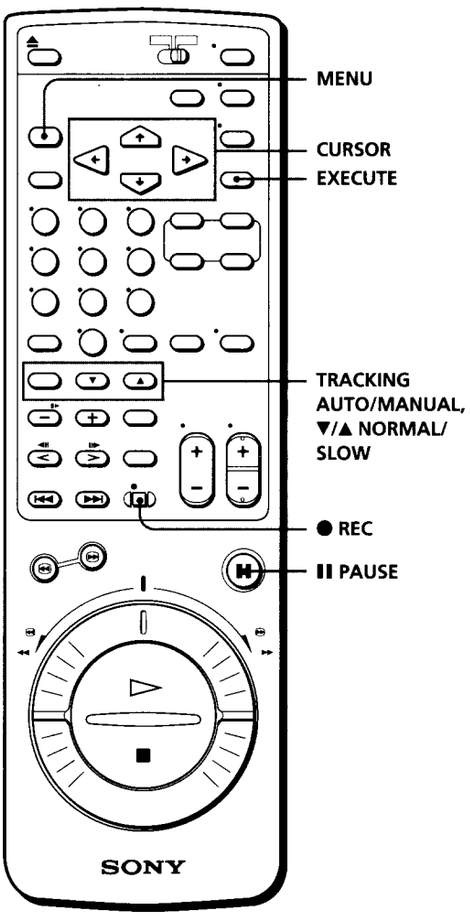
- Tapes recorded in LP mode can be played on this VCR, while playback picture quality in modes other than normal forward speed is not guaranteed.

You can play back a tape at various speeds: high-speed, slow motion, frame by frame and so on. These options are also useful for searching for a specific point during playback. The sound is muted during these operations.

Playback options	Operation	To resume normal playback
Playing at various speeds: One-fifth the normal speed Twice the normal speed High speed	During playback or pause, turn the DUAL MODE SHUTTLE ring right or left to: 1/5 ×2 ⏩ or ⏪	Release the ring.
Fast-forwarding/Rewinding	During stop, turn the DUAL MODE SHUTTLE ring to ▶▶ FF or to ◀◀ REW and release.	Press ▷ PLAY.
Viewing the picture during fast-forward or rewind	During fast-forward, turn the DUAL MODE SHUTTLE ring to ▶▶ FF. During rewind, turn the ring to ◀◀ REW.	To return to the previous mode, release the ring.
Locking in a high-speed picture	During playback or pause, press ⏩ SEARCH or ⏪ SEARCH . To change direction, press ◄II FRAME (backward) or II► FRAME (forward).	Press ▷ PLAY.
Locking in a slow-motion picture	During playback or pause, press I► SLOW +/–. You can increase the playback speed with the + button and decrease the speed with the – button. To change direction, press ◄II FRAME (backward) or II► FRAME (forward).	Press ▷ PLAY.
Playing frame by frame	During pause, press II► FRAME to advance the picture one frame or ◄II FRAME to reverse the picture one frame.	Press ▷ PLAY.
Skipping a scene	During playback, press SKIP. Pressing once skips about 30 seconds.	The VCR automatically resumes normal playback.
Rewind and automatically restart play	During stop, press ▷ PLAY on the VCR while holding the DUAL MODE SHUTTLE ring on the VCR at the ◀◀ position.	——

Adjusting the picture

The VCR automatically adjusts the picture for the best possible playback or recording. If, however, you find the automatic adjustment unsatisfactory, you can adjust the picture manually.



Note

- Auto tracking adjustment is not possible for tapes recorded in LP mode.

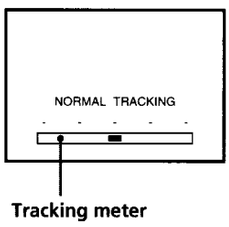
Notes

- Tapes recorded using the APC function are played normally on VCRs that do not have the APC function.
- Press II PAUSE to release recording after the APC indicator stops flashing. If you start recording before the APC indicator stops flashing, the APC function is cancelled.

Adjusting the tracking

Though the VCR automatically adjusts the tracking when playing a tape (the AUTO TRACKING indicator flashes in the display window, then lights steadily), distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking condition.

Press the ▼/▲ TRACKING NORMAL/SLOW buttons to display the tracking meter. The distortion should disappear as you press one of the two buttons. If you cannot get a clear picture with manual adjustment, press TRACKING AUTO/MANUAL to return to automatic adjustment.



Tracking meter

About Adaptive Picture Control (APC)

Adaptive Picture Control (APC) automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set APC to ON in the ADVANCED OPTIONS menu (with the APC indicator in the display window lit.)

To use APC during playback

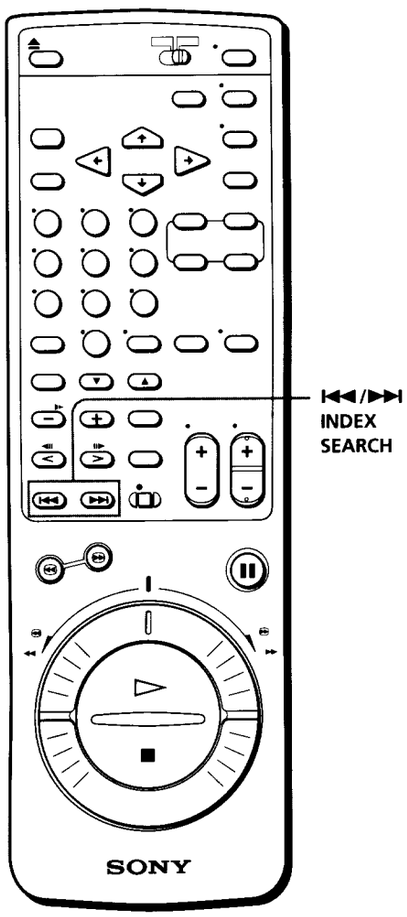
The APC function automatically works on all types of tapes, including rental tapes. You can play a tape using the APC function even if the tape was not recorded with it.

To use APC while recording

Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected. There is a short delay before the VCR actually starts recording while the VCR analyzes the tape.

If you want to start recording precisely the first time you record, set the VCR to recording pause mode (the APC indicaor flashes slowly) and press ● REC to let the VCR analyze the tape. When the APC indicator stops flashing, press II PAUSE to start recording. Recording begins immediately.

Searching using the index function



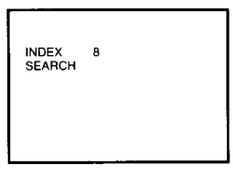
The VCR automatically marks an index signal at the point where recording starts (with the exception of when you start recording from recording pause). Use this as a reference to find the beginning of the recording. Since the index number indicates the relative position from the current position, specify how many index signals ahead or behind the specific index signal is from the current position. The VCR can search up to 99 index signals ahead or behind of the current position.

1 **Insert an indexed tape into the VCR.**

2 **Press the I◄◄/►►I INDEX SEARCH buttons repeatedly until the index number you want appears on the TV screen:**

- To locate succeeding programs, press ►►I INDEX SEARCH.
- To locate preceding programs, press I◄◄ INDEX SEARCH.

The VCR starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.



Editing

Editing with another VCR

This section shows you how to edit to or from another VCR or camcorder. You can make a copy of a tape using this VCR for recording or playback.

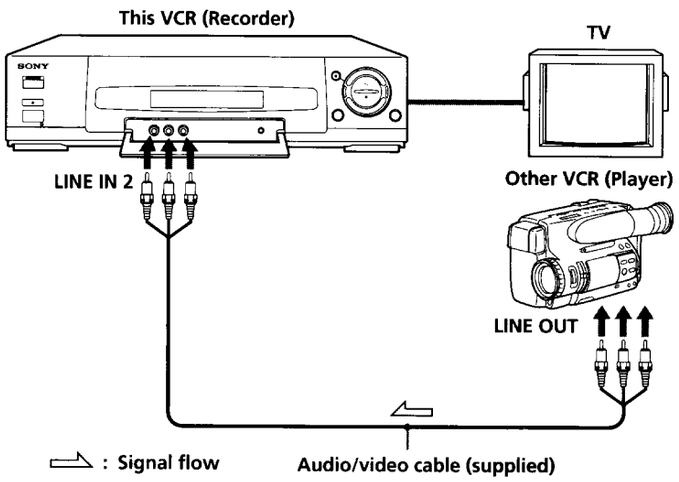
Tips

- Make sure you connect the plugs to jacks of the same color.
- To connect the other VCR, you can use the LINE IN 1 jacks as well. In this case, press INPUT SELECT to display "L1" in the display window.
- If the other VCR is a monaural type, leave the red plugs unconnected.

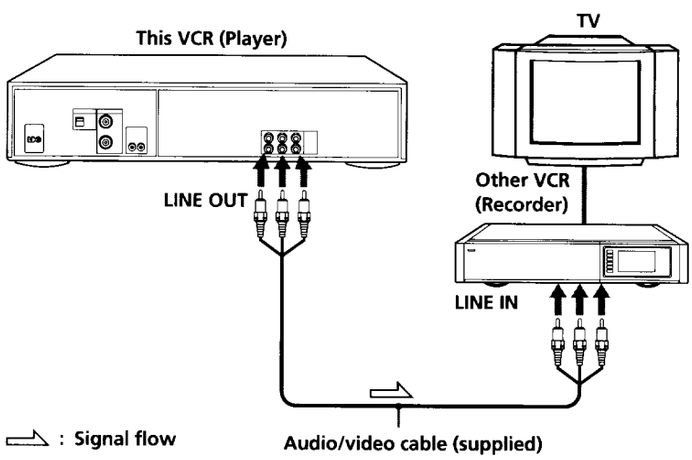
Note

- When connecting the VCRs, do not simultaneously connect the LINE IN and LINE OUT jacks on your VCR. A humming noise may occur if you do this.

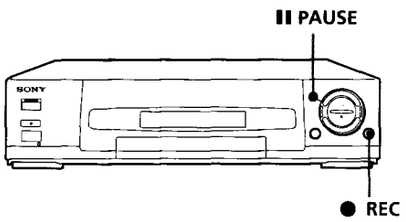
How to hook up to record on this VCR



How to hook up to record to another VCR



Operation (when recording on this VCR)



Before you start editing

- Press INPUT SELECT to display "L2" in the display window.
- Press TAPE SPEED on the remote commander to select the recording tape speed (SP/EP).

1 **Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.**

2 **Insert a tape into this (recording) VCR. Search for the point to start recording and press II PAUSE.**

3 **Press ● REC on this VCR and set it to recording pause.**

4 **To start editing, press the II PAUSE buttons on both VCRs to release the VCRs from pause.**
For best results, press the pause button on the other VCR just before pressing II PAUSE on this VCR.

To stop editing

Press the ■ STOP buttons on both VCRs.

Tips

- To release the VCRs from pause, use the II PAUSE buttons on the VCRs so that you can edit more precisely.
- To cut out unwanted scenes while editing, press II PAUSE on this VCR when an unwanted scene begins. When it ends, press II PAUSE again to resume recording (Assemble Editing).

Synchronized editing

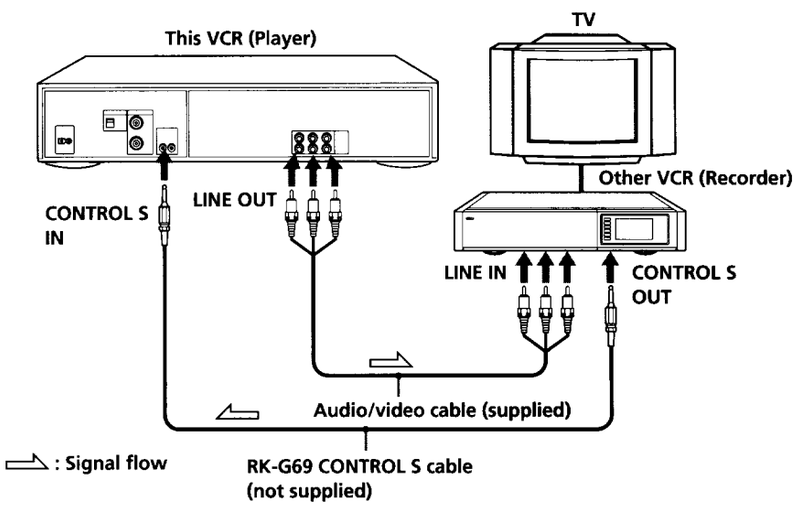
If other VCR has a CONTROL S OUT jack for synchronized editing, connect the VCRs via the CONTROL S jacks. This additional connection lets you control both VCRs from one VCR for easier editing.

Note

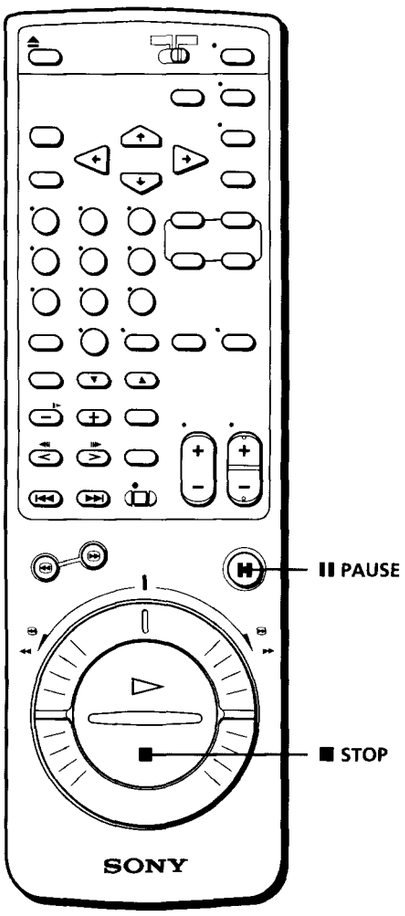
- The CABLE BOX CONTROL jack on this VCR outputs a signal to control the cable box but does not output a control signal for synchronized editing.

How to hook up via the CONTROL S jacks

The CONTROL S connection only enables you to pause and release pause.



Operation (when recording on the other VCR)



1 **Insert a source tape with its safety tab removed into this (playback) VCR. Search for the point to start playback and set it to playback pause.**

2 **Insert a tape into the other (recording) VCR. Search for the point to start recording and press II PAUSE.**

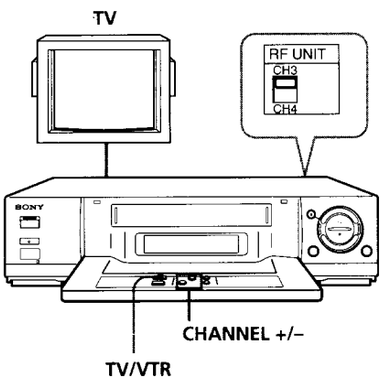
3 **Press ● REC on the other VCR to pause for recording.**

4 **To start editing, press SYNCHRO EDIT on the other VCR.**

5 **At the point you want to stop recording, press SYNCHRO EDIT to stop editing.**
Both VCRs return to pause.

To stop editing
Press the ■ STOP buttons on both VCRs.

General setup information



Setting the RF unit

When connecting the VCR to the TV using only the antenna cable, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR.
If you connect the VCR to the TV using the supplied audio/video cable, you can skip this step.

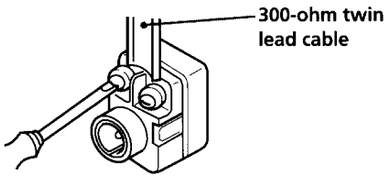
1 Set the RF UNIT switch on the rear of the VCR to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.

2 Press POWER to turn on the VCR.

3 Press TV/VTR to turn on the VTR indicator in the VCR's display window.

4 Press CHANNEL +/– to display a channel number in the display window. Select an active channel number in your area.

5 Turn on your TV and set it to the channel you selected in step **1** (channel 3 or 4).
The selected TV channel broadcast appears on the TV screen. If the channels change when you press CHANNEL +/–, you have made the correct setting.
Whenever you use the VCR, set the TV to the channel selected in step **1**.



EAC-32 Antenna connector (not supplied)

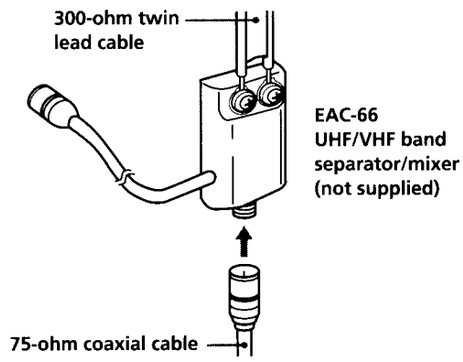
Attaching the external antenna connector

When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the antenna connector.

2 Wind the twin leads around the screws on the antenna connector.

3 Retighten the screws.



Attaching an UHF/VHF band mixer

When using both 75-ohm coaxial cable and 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the mixer.

2 Wind the twin leads around the screws on the mixer.

3 Retighten the screws.

4 Connect the 75-ohm coaxial cable to the mixer.

Troubleshooting

	Symptom	Remedy
Power	The POWER switch does not function.	• Connect the AC power cord securely.
	The power is turned on but the VCR does not operate.	• Moisture condensation occurs. Turn the power off, unplug the AC power cord and leave the VCR to dry for over an hour.
Clock	The clock has stopped and "–:– –" lights in the display window.	• The clock stops if the VCR is disconnected from the wall outlet for more than three hours. Reset the clock (and timer).
Playback	The playback picture does not appear on the TV screen.	• Make sure the TV is set to the channel for the VCR. If you are using a monitor, set it to video input.
	The picture is not clear.	• Adjust the tracking with the TRACKING NORMAL/SLOW buttons. • The video heads are dirty (see below). Clean the video heads using the Sony T-25CL video head cleaning cassette. If this cleaning cassette is not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service charge will be required.) Do not use a commercially available wet-type cleaning cassette, as it may damage the video heads. • The video heads may have to be replaced. Consult your local Sony dealer for more information.
	The picture rolls vertically during picture search.	• Adjust the vertical hold control on the TV or monitor.
	The picture has no sound.	• The tape is defective. Use a new tape.
	Both main and SAP sounds are heard.	• When you play a bilingual tape, make sure the AUDIO MIX option in the ADVANCED OPTIONS menu is set to OFF.

Symptoms caused by contaminated video heads **(continued)**

• Normal picture • Rough picture • Unclear picture • No picture (or black & white screen appears)

initial ——————→ terminal

	Symptom	Remedy
Recording	A TV program does not appear on the TV screen.	• Make sure the TV is set to the channel for the VCR. If you are using a monitor, set it to video input.
	TV reception is poor.	• Adjust the TV antenna.
	The tape ejects when you press ● REC.	• Check that the safety tab has not been removed.
	Nothing happens when you press ● REC.	• Make sure the tape has been wound to the beginning. • Select the correct source with the INPUT SELECT button. Select a channel number when recording TV programs; select "L1" or "L2" when recording from other equipment.
	No sound is recorded on the normal audio track.	• When not recording SAP sound, make sure the NORMAL AUDIO option in the ADVANCED OPTIONS menu is set to MAIN.
Timer recording	The timer does not operate.	• Check that the clock is set. • Make sure a tape has been inserted. • Check that the safety tab has not been removed. • Make sure the tape has been wound to the beginning. • Make sure a program has been set for timer recording. • Make sure your timer settings have not already passed the current time. • Check that the cable box is turned on. • The clock stops if the VCR is disconnected from the wall outlet for more than three hours. Reset the clock and timer. • When you use cable box control, make sure the CABLE BOX CONTROL option is set to ON.
Others	A tape cannot be inserted.	• Check that a tape isn't already in the tape compartment.
	The remote commander does not function.	• Make sure you are pointing the remote commander at the remote sensor on the VCR. • Replace all the batteries in the remote commander with new ones if they are weak.
	The channels on the VCR cannot be changed.	• Make sure the CABLE BOX CONTROL option is set to OFF.
	The tracking indicator does not appear on the screen.	• The recording condition of the tape is very poor and tracking cannot be adjusted.
	You cannot control other TVs.	• Set your TV's code number. The code number resets to 1 when you replace the batteries of the remote commander.
	The VCR needs to be cleaned.	• Clean the cabinet, panel and controls with a dry, soft cloth, or a soft cloth slightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine.
		If you have any questions or problems concerning your unit, please consult your nearest Sony dealer.

Specifications

System

Format
VHS NTSC standard

Video recording system
Rotary two-head helical scanning FM system

Video signal
NTSC color, EIA standards

Tape speed
SP: 33.35 mm/s (1 3/8 inches/s)
EP: 11.11 mm/s (7/16 inches/s)
LP: 16.67 mm/s (11/16 inches/s), playback only

Maximum recording/playback time
8 hrs. in EP mode (with T-160 tape)

Fast-forward and rewind time
Approx. 3 min. (with T-120 tape)

Tuner section

Channel coverage
VHF 2 to 13
UHF 14 to 69
CATV A-8 to A-1, A to W, W+1 to W+84

Antenna
75-ohm antenna terminal for VHF/UHF

Inputs and outputs

LINE IN 1 and 2
VIDEO IN, phono jack (1 each)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack (2 each)
Input level: –7.5 dBs (0 dBs = 0.775 Vrms)
Input impedance: more than 47 kilohms

LINE OUT
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jack (2)
Standard output: –7.5 dBs
Load impedance: 47 kilohms
Output impedance: less than 10 kilohms

CONTROL S IN
Mini jack (1)

CABLE BOX CONTROL (CONTROL S OUT)
Mini jack (Plug in power) (1)

Timer section

Clock
Quartz locked

Timer indication
12-hour cycle

Timer setting
Only for recording 8 programs in one month at max.

Power back-up
Built-in self-charging capacitor
Back-up duration: up to three hours at one time

General

Power requirements
120 V AC, 60 Hz

Power consumption
27 W (max.)

Operating temperature
5°C to 40°C (41°F to 104°F)

Storage temperature
–20°C to 60°C (–4°F to 140°F)

Dimensions
Approx. 430 × 103 × 323 mm (w/h/d)
Approx. (17 × 4 × 12 3/4 inches) including projecting parts and controls

Mass
Approx. 5.2 kg (11 lb 7 oz)

Supplied accessories

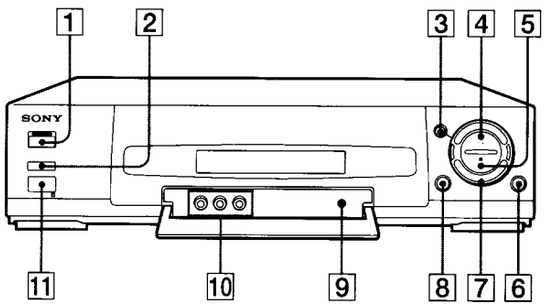
Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
AC power cord (1)
Audio/video cable (3 phono to 3 phono) (1)
Cable Mouse (cable box controller) (1)

Design and specifications are subject to change without notice.

Index to parts and controls

Refer to the pages indicated in ( ) for details.

Front panel



1 POWER switch/indicator

2 ⏏ EJECT button (35)

3 ⏸ PAUSE button (35)

4 ▷ PLAY button (35)

5 ■ STOP button (35)

6 ● REC button (38)

7 DUAL MODE SHUTTLE ring (35, 49)

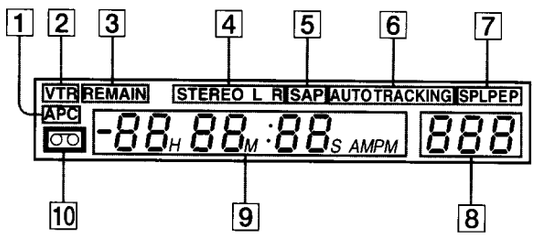
8 TIMER indicator (43)

9 EASY SET UP button (11)

10 LINE IN 2 VIDEO/AUDIO L/R jacks (52)

11 Remote sensor

Display window



1 APC indicator (50)

2 VTR indicator (40)

3 REMAIN indicator (36)

4 STEREO L/R indicator (37)

5 SAP indicator (40)

6 AUTO TRACKING indicator (50)

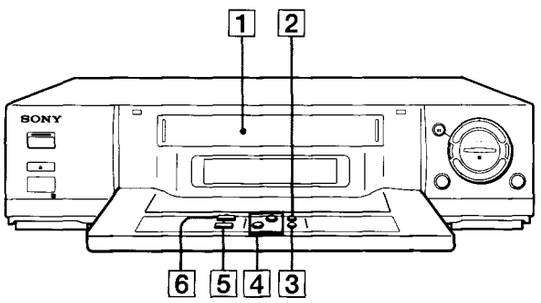
7 Tape speed indicator (38)

8 Line/channel indicator (38)

9 Time counter/remaining time counter/clock (36)

10 Tape indicator

Front cover, with cover opened



1 Tape compartment

2 QUICK TIMER button (39)

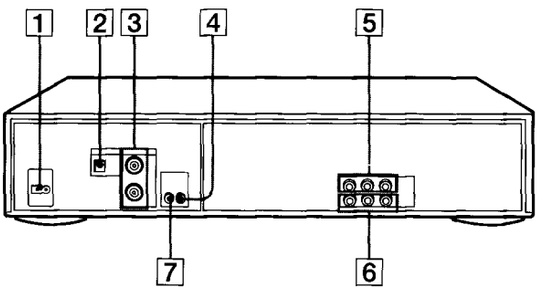
3 TAPE SPEED (SP/EP) button (38)

4 CHANNEL +/– buttons (38)

5 INPUT SELECT button (38, 53)

6 TV/VTR button (40)

Rear panel



1 AC IN connector

2 RF UNIT switch (55)

3 VHF/UHF connectors (10, 12, 14, 16, 18)

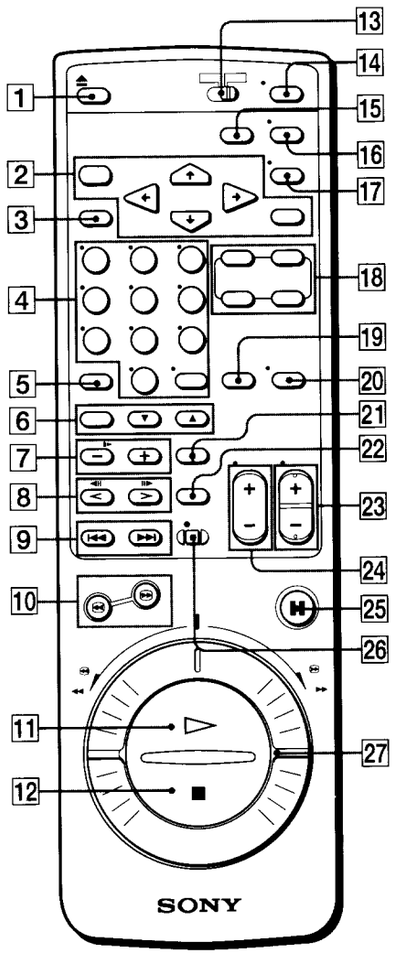
4 CABLE BOX CONTROL (CONTROL S OUT) jack

5 LINE IN 1 AUDIO L/R/VIDEO jacks (52)

6 LINE OUT AUDIO L/R/VIDEO jacks (9, 52)

7 CONTROL S IN jack (54)

Remote commander



1 ⏏ EJECT button (35)

2 Menu operation buttons (21)
MENU button
CURSOR ↑/↓/←/→ buttons
EXECUTE button

3 COUNTER RESET button (36)

4 Channel number buttons and ENTER button (26)

5 SKIP button (49)

6 TRACKING buttons (50)
▼/▲ NORMAL SLOW (STILL ADJUST) buttons
AUTO/MANUAL button

7 ▮► SLOW buttons (49)

8 ◄II/II► FRAME buttons (49)

9 ⏮/⏭ INDEX SEARCH buttons (51)

10 ⏪/⏩ SEARCH buttons (35)

11 ▷ PLAY button (35)

12 ■ STOP button (35)

13 TV/VTR remote control switch (6)

14 POWER button

15 TIMER CLEAR button (47)

16 TV/VTR button (40)

17 AUDIO MONITOR button (37)

18 VCR Plus+ buttons (45)
VCR Plus+ button
ONCE button
DAILY button
WEEKLY button

19 COUNTER/REMAIN button (36)

20 DISPLAY button (36)

21 TAPE SPEED button (38)

22 INPUT SELECT button (38, 53)

23 CH +/– buttons (38)

24 VOL +/– buttons (6)

25 II PAUSE button (35)

26 ● REC button (38)

27 DUAL MODE SHUTTLE ring (35, 49)

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Quick reference to using the VCR

Hookup 1

To play a tape

1. Set the TV to channel 3 or 4 (or to video input, if you made A/V connections.)
2. Insert a tape and press ▷ PLAY.

To record a program

1. Turn on the cable box.
2. Press VCR Plus+ on the remote commander.
3. Enter the program's PlusCode number.
4. Press ONCE, DAILY, or WEEKLY.
5. Insert a tape.
6. Press POWER to turn off the VCR.
7. Leave the cable box on.

To watch TV

1. Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Turn on your cable box.
3. Set the TV to the cable box output channel (usually 2, 3, or 4).
4. Set the cable box to the channel you want to watch.

Hookup 2

To play a tape

1. If you made A/V connections, set the TV to video input.
   If you didn't use A/V hookup:
   - Turn on the cable box.
   - Set the cable box to channel 3 or 4.
   - Set the TV to the output channel of the cable box (usually 2, 3 or 4).
2. Insert a tape and press ▷ PLAY.

To record a program

1. Press VCR Plus+ on the remote commander.
2. Enter the program's PlusCode number.
3. Press ONCE, DAILY, or WEEKLY.
4. Insert a tape.
5. Press POWER to turn off the VCR.

To watch TV

1. Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Select the channel with your cable box (if you have one) or with your TV.

Hookup 3

To play a tape

1. Set the TV to channel 3 or 4 (or to video input, if you made A/V connections.)
2. Insert a tape and press ▷ PLAY. If there's no picture on your TV, press the VCR's TV/VTR button until the VTR indicator comes on in the display window.

To record a program

1. Press VCR Plus+ on the remote commander.
2. Enter the program's PlusCode number.
3. Press ONCE, DAILY, or WEEKLY.
4. Insert a tape.
5. Press POWER to turn off the VCR.

To watch TV

1. Turn off the VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Set the TV to the channel you want to watch.

Hookup 4

To play a tape

1. Set the TV to channel 3 or 4 (or to video input, if you made A/V connections.)
2. Insert a tape and press ▷ PLAY.

To record a program

1. Turn on the cable box.
2. Set the cable box to the channel you want to record.
3. Press VCR Plus+ on the remote commander.
4. Enter the program's PlusCode number.
5. Press ONCE, DAILY, or WEEKLY.
6. Insert a tape.
7. Press POWER to turn off the VCR.
8. Leave the cable box on.

To watch TV

1. Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2. Turn on your cable box.
3. Set the TV to the cable box output channel (usually 2, 3, or 4).
4. Set the cable box to the channel you want to watch.

If you have any questions about this product, you may call: **Sony Customer Information Center** 1-800-222-SONY (7669)
or write to: **Sony Customer Information Center** Sony Drive, Mail Drop #T1-11, Park Ridge, NJ 07656

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